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#### THE TREATMENT OF PSYCHIATRIC ILLNESS: MODERN TRENDS IN MEDICINE

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A GENERALLY acceptable and verifiable report of psychiatric treatment procedures is remarkably difficult to produce. This difficulty comes partially from the rather ethereal nature of illnesses of human behaviour, partially from the disposition of psychiatrists, and to a considerable extent from the relative youth of almost all treatment procedures in this branch of medicine.

In the face of this dilemma then I will adopt the somewhat egocentric course of describing my own psychiatric therapy and try to picture the trend in treatment in my practice from 1941 to 1959. This description should be looked on for what it is. It is not a statistical survey of the success of treatment methods but rather a survey of treatment methods employed by one psychiatrist who considers himself moderately eclectic and doing a general practice of psychiatry in a small Canadian city which has better psychiatric resources than many Canadian cities and a good deal less than some. This method of presentation obviously lacks scientific validity. It does have the merit of making the subject more concrete. As well, from a fairly extensive knowledge of what goes on in the psychiatric scene in North America, I think that this is a fair sample of the methods the majority of psychiatrists in private practice use in the treatment of their patients. I believe it is also a fair sample of the sort of thing that is done in a great many of the teaching centres of psychiatry, certainly in Canada. There are, of course, exceptions depending on individual philosophy in certain areas; but as a bird's-eye view of psychiatric treatment on the North American continent, I think this will suffice.

The material to be presented comes from three separate periods of my professional life.

1. A review of 70 consecutive cases seen in private psychiatric practice from September 1941 to June 1942, this being the time in which I was in psychiatric practice before electroconvulsive therapy was available in the city of Halifax.

2. A review of 100 consecutive cases seen during the year 1948, this being a time when electroconvulsive therapy was well established but the neuroleptic drugs had not yet appeared.

3. A review of 100 consecutive cases seen during 1958 and early 1959, a period when some new drugs were well established and others were being introduced nearly every day. I should add that the first result of this survey impressed me with the fact that almost all of the changes that have taken place and that could be called advances in psychiatric treatment have occurred during my professional lifetime. I trust it is not entirely a defensive manoeuvre on my part when I suggest that this attests to the relative youthfulness of treatment procedures in this specialty.

With this introduction then, I will present a survey of psychiatric treatment in Halifax, Nova Scotia, as it has developed over this 18-year period. In 1941 I would presume that the mere fact of going into private psychiatric practice marked a new trend. Certainly, at that time in Canada there were few such practitioners; and I believe there were none east of Quebec city. Physical methods of treatment had just been introduced and as yet had not widely influenced psychiatric treatment. At this time facilities for these treatments did not exist in the Atlantic provinces of Canada. A Minister of Health of this era, when urged to incorporate a psychiatric unit in plans for a new general hospital, snorted indignantly and proclaimed that he would have no "crazy people" in his hospital. The provincial mental hospital, the only psychiatric facility available, had 400 beds and two psychiatrists. The public attitude towards psychiatry was well expressed in the following quotation taken from the "Halifax Chronicle" 25 years ago:<sup>1</sup> "Congratulations were extended to Honourable F. R. Davis in the Legislature on his efforts to bring expenses and income at the Nova Scotia Hospital nearer together. While it was not intended that the institution should be a paying proposition, it was hoped that income and expenses should be made to meet if possible. The expenses of the institution have been a great burden to the municipalities."

What then of psychiatric practice and treatment methods in 1941?

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TABLE I.—DIAGNOSIS—70 PATIENTS—1941-42

Psychosis	
Organic.....	5
Affective.....	16
Schizophrenic.....	15
Neurosis.....	22
Personality disorder.....	1
Other (mental defect, etc.).....	9
Non-psychiatric.....	2
	<hr/> 70

Table I shows the primary diagnosis of 70 consecutive psychiatric referrals seen between September 1941 and June 1942. The bulk of diagnosis falls in the psychotic category with 36, the neurosis group follows with 22; there was one personality disorder, and nine were classified as other psychiatric diagnosis, for example, mental defect and so on.

In June 1942, I first began using electroconvulsive therapy at the Dalhousie Public Health Clinic and the Halifax City Home, both as an in-patient and an out-patient procedure. By 1948 this new method of treatment was well established, and I use this year as representative of psychiatric practice at a period in which the shock therapies were commonly used but before drug therapy became prom-

TABLE II.—DIAGNOSIS—100 PATIENTS—1948

Psychosis	
Organic.....	5
Affective.....	24
Schizophrenic.....	19
Neurosis.....	31
Psychosomatic disorder.....	2
Other (mental defect, etc.).....	12
Non-psychiatric.....	7
	<hr/> 100

inent. Table II gives the diagnosis of 100 consecutive psychiatric referrals during 1948. Again, psychosis makes up the largest group, 48%. Neurosis follows with 31, and there are two patients suffering from psychosomatic disorder. This type of referral shows a somewhat greater willingness on the part of both medical practitioners and patients to seek psychiatric help for conditions previously not thought of as being in the psychiatric field—one of the trends in modern medical practice.

TABLE III.—DIAGNOSIS—100 PATIENTS—1958

Psychosis	
Organic.....	5
Affective.....	20
Schizophrenic.....	18
Neurosis.....	19
Personality disorder.....	29
Other (mental defect, etc.).....	4
Non-psychiatric.....	5
	<hr/> 100

Turning to 1958, for the most recent sampling of my practice available, Table III shows psychosis as occupying a prominent place. Neuroses appear to be sharply reduced, but the new factor that has been entered in diagnosis is the term

"personality disorder", which is used for 29 of 100 cases. This indicates either a change in the patient material or a trend in psychiatric diagnosis. I think the latter assumption is correct. With increasing understanding of personality dynamics and structure and with increasing psychiatric facilities giving the individual psychiatrist more leisure to study a patient thoroughly, one finds that the presenting symptomatology which previously was categorized as a neurosis was only an exacerbation of long-standing personality trends which are best designated by the term "personality disorder". Another interesting trend comes from the breakdown of the cases included under the category "other". This figure has dropped markedly because such things as behaviour problems in children now go to the Child Guidance Clinic. The enlargement and specialization of community facilities is certainly a trend in modern psychiatry. Of more interest is the source of referral of three of the four cases in this other diagnostic category. These patients came from the Department of Public Welfare and were Nova Scotians applying for the disabled persons pension on the grounds of psychiatric disability. The increasing growth of the welfare state is not divorced from private psychiatric practice.

Another interesting trend is in the group labelled "no psychiatric illness". In previous years this group largely consisted of people with complaints from organic disease, brain tumours, multiple sclerosis, etc. In 1958, however, three of the five referrals were from one or the other of various foreign missionary boards who have over the years developed a practice of having a psychiatric evaluation of candidates for the foreign mission service. It is of considerable interest to see the new type of demand that is being made of the psychiatrist in our changing social milieu.

TABLE IV.—SUMMARY OF TREATMENT METHODS—1941

Commitment—Nova Scotia Hospital.....	29
Psychotherapy.....	13
Psychological support—drugs, etc.....	10
Referred to family doctor.....	5
Environmental manipulation.....	4
Other.....	9
Total.....	<hr/> 70

To turn now more specifically to treatment methods, Table IV summarizes the treatment methods employed in the 70 psychiatric referrals seen in 1941 and 1942. Of these 70 cases the most commonly employed "treatment method" was commitment to the Nova Scotia Hospital despite the fact that during these early war years this institution was too short-staffed to provide psychotherapy, had not introduced electroconvulsive treatment at that time, and had been forced, because of staff shortage, to discontinue insulin coma treatment which had been utilized since 1937. Commitment was employed on 29 occasions. One can not feel



that this represented anything but taking the patient into protective custodial care. Of the group committed, 14 were in the affective psychotic group, and at that period little could be done beyond keeping the patient from killing himself, in the hope that nature would bring the attack to a conclusion, which, of course, occurred in a fair percentage of cases. A few patients were taken on in psychotherapy, these being chosen not only because they were suitable for psychotherapy but also with an ever watchful eye to the patient's economics, geography and the availability of the psychiatrists' time which constantly became less. Some patients were referred to their family doctor, and both the family doctor and the psychiatrist used drugs which were mainly barbiturates, bromides, and vitamins. It would seem that the private practising psychiatrist in 1941 provided a diagnostic consultation service, a committing service for the state mental hospital and psychotherapy for a few patients, seemingly a rather therapeutically impotent situation.

TABLE V.—SUMMARY OF TREATMENT METHODS—1948

Commitment—Nova Scotia Hospital.....	17
General Hospitals	
in-patients.....	30
out-patients.....	9
Psychotherapy.....	18
Psychological support—drugs, etc.....	0
Referred to family doctor.....	8
Environmental manipulation.....	6
Special community facilities.....	4
Other.....	8
Total.....	100

Table V summarizes the treatment methods in 100 consecutive psychiatric referrals in 1948. This was the period in Halifax psychiatry when I was still the only private practitioner, but several other people had signified an interest in the field and were in training in preparation to return to the city to practise.

Very few changes had taken place in community organization, but both staff and funds were to become available from the Federal Mental Health Grants in the very near future. In the Nova Scotia Hospital slight staff improvement occurred, insulin coma therapy had been resumed, and electroshock treatment had been instituted. After a very considerable struggle, the practice of admitting suitable psychiatric patients to the general ward beds at the Victoria General Hospital had become legitimate. As already noted, the diagnostic categories of these 100 patients had changed little, but there are striking changes in treatment procedures.

Most apparent is the sharp drop in commitment of patients to the Nova Scotia Hospital, this despite the fact that active psychiatric therapy was available in that institution for a considerable number of patients. Now 17% of referrals were committed as compared with 41.4% seven years earlier. Of great interest is the increasing use of the general hospital for psychiatric treatment, an

increased use of psychotherapy, and the discovery of some community facilities which had been present earlier but not recognized by the psychiatrist.

Breaking down these figures diagnostically, they are still more telling. In 1941 most patients with acute organic psychosis were committed to the Nova Scotia Hospital, whereas in 1948 100% of them were treated in the general hospital. In the affective group, 14 of 16 were committed to the Nova Scotia Hospital in 1941, whereas in 1948 only two of 20 patients required commitment.

TABLE VI.—SUMMARY OF TREATMENT METHODS, 1958

Commitment—Nova Scotia Hospital.....	8
General Hospital	
in-patient.....	1
out-patient.....	13
psychiatric unit.....	36
Psychotherapy.....	8
Psychological support—drugs, etc.....	4
Referral to family doctor.....	3
Environmental manipulation.....	0
Special community facilities.....	16
Others.....	11
Total.....	100

To turn now to 10 years later, that is, 1958, one sees some very important differences in the pattern of psychiatric treatment (Table VI). Again, one notices a sharp reduction in the percentage of patients committed to mental hospitals. In 1958 only 8% of patients were committed as compared with 41% in 1941, and 17% in 1948. Of the eight patients committed, one had chronic organic psychosis and was committed for custodial care; two had affective psychosis, and were committed largely because accommodation was not available in the general hospital; one had a paranoid psychosis; and four had schizophrenia, committed because it was specifically believed that they should receive coma insulin therapy. In other words, the reason for commitment in 1941, namely, custodial care, has virtually disappeared, and the majority of commitments are for positive reasons. Striking, too, are the new methods of treatment which are being used. "Tranquillizing" drugs have made their appearance, and the majority of patients are now receiving, for better or worse, one of the phenothiazine derivatives, meprobamate or psychostimulants. New community facilities are available—the Child Guidance Clinic, the speech therapist, and the community mental health clinics. The community's demands on the psychiatrist have changed, too, and he is being asked to make decisions in new social areas. Psychotherapy remains as the only treatment present in all three periods. While the number of patients treated by psychotherapy seems not to have changed, this figure is misleading. Because of more psychiatrists and community clinics, more patients are receiving psychotherapy through appropriate referrals and are receiving longer and more intensive treatment. A survey of psychiatrists and outpatient clinics

operating in the Halifax area shows that in early 1959 about 200 patients were being seen at any one time in regular psychotherapy. By combining physical approaches with psychotherapy many patients are treated in this way whom it was impossible to treat in 1948.

Another striking change is the further development of facilities in the general hospital where we no longer have scattered beds in a general medical ward but a psychiatric unit that exists as a department of the hospital with the same status as the other major departments, and offers not only the methods of therapy outlined above but the advantage of a controlled milieu provided by a trained psychiatric team. One last thing is a further change in the treatment of affective psychosis, where we see electroconvulsive therapy still holding a prominent part but some patients being treated with drugs of the psychostimulant group.

Trying now to draw a general picture of modern trends in psychiatric therapy based on this examination of Halifax practice, I find that the significant changes that have taken place are the following:

1. The introduction of electroconvulsive therapy with its modern modifications for affective psychosis. As I have indicated in this survey, I am one that had a period of training in the pre-E.C.T. days and then practised for a few months when this therapy was not available. For this reason perhaps I am overly impressed with the tremendous change brought about by this form of treatment. In my early days of practice when one saw a depression, the best one could do was to commit the patient to a mental hospital to guard against suicide and assure him that in eight or 10 months he would probably recover. What a depressing experience for both patient and therapist! Now it is a matter of being convinced that a patient coming to the office really has an endogenous depression because then one can say with a considerable measure of certainty that in three or four weeks of general hospital treatment the patient will recover. We may be only shortening the duration of the psychosis, but this represents a major reduction in human suffering. Certainly, too, the suicide rate has been reduced; and in the elderly patient who so often goes downhill physically during a depression, it may be literally a life-saving measure. I believe further that the introduction of electroconvulsive therapy has been one of the things that have allowed the rapid growth of psychiatric medicine. This demonstration of therapeutic activity and efficiency has done more to change professional and public attitudes concerning mental illness than almost anything else we have achieved.

Finally, lest I appear too enthusiastic over a treatment procedure which admittedly has given me a very great amount of personal satisfaction as well as changing very radically the psychiatric economic picture, let me say that I have many

patients who would strongly support my statements. People who had severe depressions in pre-electroshock days have had their attitude to living changed radically by the knowledge that if their illness recurs they can have prompt and efficient treatment with little disruption of their life pattern.

2. The great expansion of psychotherapeutic medicine. As I have mentioned above, this does not clearly emerge from my figures because of my own special circumstances, but I have indicated the growth of this method of treatment in my own area.

3. The introduction of drug therapies over the past five years. The success of drugs is especially difficult to evaluate in psychiatry, particularly in private psychiatric practice. To summarize briefly, these new drugs fall into one of three groups.

- (a) The phenothiazines, with chlorpromazine as the best example. These drugs are primarily useful in severe excitement states and agitation and especially in schizophrenic psychosis. They have made treatment of acute organic psychosis a good deal easier and usually a general hospital procedure. Some injectable forms of phenothiazine, such as promazine, are essential for every doctor's emergency bag. These drugs, too, have certainly made changes in the condition of a large number of schizophrenic patients in mental hospitals.

In the outpatient and private practice of psychiatry, the situation is not quite as clear. Certainly, patients in the doctor's office who are not so acutely disturbed do not show the same brilliant response to psychopharmacological agents that mental hospital patients seem to. However, it is noteworthy that since the introduction of these drugs, of 17 schizophrenic patients in the 1958 group, 13 were treated in the general hospital inpatient or outpatient unit, usually with a combination of drugs and psychotherapy. Many of these could not have been maintained outside a mental hospital during the early days of their treatment without the phenothiazines.

- (b) Meprobamate. This drug is primarily for the control of anxiety and is said to be useful for neurotic patients. A good many patients with anxiety do respond to meprobamate, and when this is combined with psychotherapy, the results may be very satisfactory. I must confess that I have serious doubts whether there are many patients who are controlled with meprobamate who could not be controlled just as efficiently and with as few side effects and a great deal more cheaply with some of the older medications, such as phenobarbital.

- (c) The psychostimulants. In the last two years we have had a new group of drugs which are said to elevate and stimulate inhibited psychomotor activity. The first of these was iproniazid (Marsilid). After its introduction, there were enthusiastic reports regarding its value in the treatment of depressive states. After some months of use there were alarming reports concerning its toxicity,



and it fell into considerable disrepute. Personally, I have seen no severe toxic effects which threatened life, but I have seen two patients who had mild agitation become severely agitated while receiving the drug, one to the point where it required days of heavy sedation to get him back to his previous state. On the other hand, I have seen a number of cases of typical endogenous depression respond in the course of two or three weeks of treatment with this drug without any very unpleasant complications. To one such patient I had given electroconvulsive therapy some ten years previously. On this second occasion he responded well to iproniazid without any interruption in his business life and without the unpleasantness of a temporary memory defect. I believe there are a group of patients who respond well to this medication and that its dangers have been overemphasized.

A new member of the psychostimulant family is imipramine (Tofranil). That this is a drug of considerable potency is borne out by the literature and by one's individual experience. Two of the patients with affective psychosis treated earlier with electroshock are included in the 1958 figures, having had a recurrence of their depression, and on this occasion they were treated with imipramine. Both of these patients have done well, though they have suffered side effects, the most uncomfortable being marked dryness of the mouth. They, however, have felt that this was worth while. One patient is an extremely efficient school teacher during most of the year who gets a severe depression of the manic-depressive sort almost every spring. Repeated absences from work prolonged by the memory defect she gets from electroshock treatment have made it difficult for her to carry on her job. This time, despite a markedly unpleasant dry mouth, she is very happy in having recovered on imipramine therapy. We have, however, had several patients who became completely disorganized after receiving only 25 to 50 mg. of this drug. These people became dozey, extremely dizzy, and ataxic and had a marked drop in blood pressure. They were so uncomfortable and their physical deterioration was so alarming that the drug was stopped. One of these was successfully treated with iproniazid a few days later.

We have also had one patient 72 years of age, treated 15 years before with electroconvulsive therapy. At that time she was hypertensive but had had no cardiac difficulties in the intervening 15 years. Taking imipramine 25 mg. three times a day, she improved slightly. The dose was raised to 125 mg. a day. She developed auricular fibrillation and acute cardiac failure three days later. Despite energetic medical treatment with temporary improvement, she died ten days later. It is obviously impossible to relate this directly to the drug and one only reports it as something that happened to a patient a week after this drug was started. Similar reports<sup>2</sup> from other Canadian doctors con-

firm my impression that this is a potent drug valuable in the treatment of depressions, but I strongly suspect that there may be unpleasant and perhaps dangerous side effects, and would urge caution in its use.

4. A most significant trend of the past 15 years is the development of psychiatric units in general hospitals. In my own series, the general hospital was not used at all in 1941. By 1948 there were some beds available in the general hospital wards that enabled 39 patients to be treated. By 1958, 50 of 100 patients were treated in general hospital facilities—36 of these being in a psychiatric unit of a general hospital. This growth has been paralleled right across Canada. In 1956,<sup>3</sup> of all first psychiatric admissions, psychiatric facilities in general hospitals accounted for 43.2%. Of voluntary first admissions, 85.6% were to general hospitals, representing 68.1% more first admissions to general hospitals in 1956 than in 1955. This is all the more remarkable since the number of beds available in psychiatric units in general hospitals represent less than 2% of the psychiatric beds in the country. This Canadian development augmented by day and night hospitals and active outpatient clinics has provided rapid and efficient care for a large number of psychiatric patients close to their homes and frequently with little interruption in their ordinary patterns of living.

5. While changes have occurred in the private and general hospital practice of psychiatry, these figures also indicate changes in the mental hospitals in Canada. In 1941, as I have pointed out, patients were committed largely for custodial care. Now because of increased staff and admissions that are selected for positive reasons the mental hospital is able to offer active therapy, which represents a healthy trend in the over-all psychiatric picture.

6. Developments in the psychiatric unit and in the mental hospital have emphasized the fact that psychiatric treatment is much more than what the psychiatrist does. It is more than giving drugs or using physical methods of therapy. Rather, psychiatric treatment depends on people. Psychiatric treatment is carried out by a team which includes nurses, social workers, psychologists, ward attendants, and so on. The interpersonal relationships existing between this group and the attitude which they express towards patients are extremely important therapeutically. Attention to the milieu which surrounds the patient has led to striking changes in interpersonal relationships and in attitudes towards therapy as expressed in such things as the therapeutic community, the open-door policy, etc.

7. The development of community facilities. A great many of my patients were handled more satisfactorily because of the new facilities which the community has been able to provide in the ten years from 1948 to 1958. Community clinics scattered at strategic points throughout the province

have allowed many more patients to receive psychotherapy and other methods of treatment close to their home and with a satisfactory continuity of care. In addition, such things as the Child Guidance Clinic, speech clinics, senior citizens' club, and specially trained teachers in the school, all must be considered as important and integral parts of psychiatric treatment services aiding in the restoration of the emotionally disturbed patient to some reasonable degree of mental health.

8. My list of trends has gone from specific techniques to hospital facilities to special community facilities. Perhaps of greatest importance, without which many of the others would not have come into being, is the change in public attitudes regarding psychiatric illness. This has to do with the lessening of the disgrace associated with such illness, the willingness on the part of the public to seek treatment voluntarily at an early date, to enter hospital, and so on. But in the community which rejoices in the name of New Scotland changes in public attitudes can probably not be measured more decisively than in terms of money. I have already quoted from our leading newspaper of 25 years ago expressing the view of the Nova Scotia Legislature on expenditures in the field of mental health. Twenty-five years later this same institution spent \$1,197,000 of provincial money on the Nova Scotia Hospital. To the best of my knowledge this was one of the few issues which received no opposition or criticism. I have no reason to believe that public opinion lags behind the opinion of our legislative body. The willingness to spend money on treatment facilities and more recently on greatly needed psychiatric research is to me the most important modern trend in the psychiatric field.

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## RÉSUMÉ

L'auteur décrit les vicissitudes du traitement psychiatrique comme il les a connues depuis 1941. Il divise cette période en trois parties: la première, illustrée par l'analyse d'une série de 70 malades traités de 1941 à 1942, représente l'époque précédant l'introduction de la sismothérapie. La deuxième, dans laquelle il revoit une série de 100 malades traités au cours de 1948, représente la période où les électrochocs étaient pratiqués régulièrement mais où les neuroleptiques n'étaient pas encore employés. Enfin la troisième période, illustrée également par une série de 100 malades traités en 1958-59, reflète l'avènement et l'essor de la psychopharmacologie. L'auteur constate qu'en 1941 à Halifax l'établissement d'un cabinet de consultation en psychiatrie marquait déjà une innovation. Il souligne également que si au cours des deux premières périodes la proportion des psychosés et des névrosés était sensiblement la même, elle varia considérablement au cours de la troisième période en vertu de l'importance accordée aux malades souffrant de désordres de la personnalité.

Durant la première période le traitement le plus souvent employé était le placement du malade dans des établissements d'aliénés pour protection sociale et physique de sa personne. Les barbituriques et les bromures formaient alors les piliers de la thérapeutique médicamenteuse. Au cours de la deuxième période on permit l'admission de malades psychiatriques pour traitement dans les grands hôpitaux généraux dans une sorte de quartier d'hospice où ils recevaient des soins. On observa alors une baisse dans les admissions aux hôpitaux pour malades mentaux. Dans la troisième période les quelques malades admis dans les établissements d'aliénés étaient surtout pour fins de traitement et rarement pour internement simple.

Les jalons dans cette progression peuvent donc être établis comme suit: l'introduction de la sismothérapie suivie du grand essor de la médecine psychothérapeutique et de l'instauration de la psychopharmacologie comprenant l'emploi des phénothiazines, du meprobamate et des psychostimulants. On observa également une évolution dans l'attitude de la médecine hospitalière vis-à-vis des malades psychiatriques et parallèlement un changement dans le niveau de traitement des établissements d'aliénés. De nos jours le psychiatre n'est plus seul pour traiter le malade mais il possède une équipe à qui il peut distribuer les tâches que comportent les nombreuses phases du traitement. La création au sein de la collectivité de cliniques à orientation variée distribuées à des endroits stratégiques a permis à un plus grand nombre de malades de recevoir des soins psychiatriques. Il y a lieu aussi de noter un changement d'attitude dans la population à l'égard de la psychiatrie, reflété dans le gouvernement et prenant effet dans le budget annuel qui consacre des sommes de plus en plus élevées à la médecine mentale.

## CANADIAN JOURNAL OF SURGERY

The July 1960 issue of the *Canadian Journal of Surgery* will contain the following original articles, case reports, surgical technique and experimental surgery:

*History of Canadian Surgery:* Manitoba surgical pioneers—Ross Mitchell.

*Original Articles:* Esophageal stricture secondary to hiatus hernia in the aged—E. M. Nanson. Islet-cell tumours of the pancreas—J. R. F. Mills. Adrenal carcinoma—J. E. Leddy, L. M. Brand and K. J. Postma. Carbon dioxide narcosis in the postoperative period—R. J. Baird and W. G. Bigelow. The flexure syndrome: relationship of bowel angulation to obstruction—W. R. Ghent. Benign gastric tumours of non-epithelial origin—J. Couture. Measurement of brain circulation time by radioactive iodinated albumin—W. Feindel and S. Fedoruk. Primary retroperitoneal tumours—J. K. Wyatt and L. N. McAninch. Developmental coxa vara—H. R. Carter.

*Case Reports:* Grease-gun injury—J. C. Osborne. Transpyloric prolapse of aberrant pancreatic tissue—J. D. Longley and R. W. Boyd. Mesenteric lipoma in children—W. L. Ogilvy.

*Surgical Technique:* Further studies of catheter-venosets employing half-needle guide—E. C. Elliot. Disinfection of anæsthetic apparatus—P. Warner and J. Doherty.

*Experimental Surgery:* Morphological changes in the liver and biliary tract of dogs with partial obstruction—A. C. Ritchie, F. G. Murphy, D. R. Webster and S. C. Skoryna.



## THE CONTRIBUTION MADE BY MATERNAL MORTALITY STUDY COMMITTEES\*

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IDEALLY, each woman who becomes pregnant should, barring the inevitable physiological wastage, produce a mature healthy infant with no loss to herself of physical or emotional stamina. It is idle here to argue whether the theory of Malthus should be employed to prevent overcrowding. Our individual duty as physicians in the management of patients when pregnancy supervenes should be to attempt to reduce maternal crippling or death to that irreducible minimum. Such is the prime collective duty of a maternal mortality or welfare committee, whether its members be elected from their fellows or be appointed by state or legislative decree, and whether their scope embrace village, state, continent or world in population and area. The World Health Organization,<sup>1</sup> in its constitution adopted in 1948 and subscribed to by 88 nations, lists as one of its functions "the promotion of maternal and child health and welfare", and illustrates the ultimate in its influence. But, since density of population, available food, sanitation, medical care, available hospital beds, and a host of other factors, each and all complicate the problem, comparative results must be judged relatively, if indeed they can be judged at all.

Throughout the ages, woman's procreative triumphs have been attended by mishaps. Abortion, with its attendant bleeding and possible sepsis, has terminated about one in four pregnancies. During the viable gestation state, malposition with possible disproportion, bleeding, sepsis, and toxæmia, with its frequent eclamptic culmination, have in their turn jeopardized and even claimed her life. Even in recovery, she sometimes remained an obstetric cripple.

In the beginning, she probably delivered herself, with the threat to her life only of malposition or bleeding. During the first cultural advancement, the man stayed with his wife, assisted her delivery and severed the cord. Later, the man was excluded; labour and birth were purely feminine accomplishments and a female acted as helper. This inevitably resulted in the use of an experienced helper—the midwife—although the term itself was not in general use until the early fourteenth century. With her officiation, there began the strange folklore and taboos which were to persist for generations, each for good or evil, as the case may be. With the midwife, came also manipulative interference, either ignorantly or intelligently attempted, which resulted so often in sepsis with resultant maternal death or crippling. It is true that physi-

cians wrote learnedly of the problems and practices of obstetrics, but since they only attended women in obstructed labour and provided manual or instrumental force in the dismemberment or extraction of the dead fetus (crochet hook or fillets), their influence amounted to but little. Moreover, midwives learned by word of mouth, since dissemination by the written word was purely local, and they propagated the errors and the malapropos of their predecessors. Hippocrates in the fifth century B.C. attended to puerperal fever and prescribed pessaries and suppositories. His treatment was followed faithfully for centuries.

The fall of Rome in the fifth century A.D. plunged the obstetric world into stygian darkness for about 1000 years: black years which were only fitfully illuminated by the beacons of learning at Padua, Florence, Cordova and a few other centres.

The renaissance of midwifery, fixed arbitrarily within the limits of the sixteenth and seventeenth centuries, is among the most important and fascinating periods in our history. The newly invented compass had assisted Columbus in discovering a new world to the West and had opened trade routes to the East. The art of printing had been invented, resulting in a vastly increased dissemination of knowledge. Martin Luther had challenged the Church of Rome and founded Protestantism. Newton was changing the concept of the solar system, and Galileo was challenging the Copernican system. Rembrandt and da Vinci were painting and pursuing anatomical studies for art's sake. Leeuwenhoek had invented the microscope. Harvey was discovering the circulation of the blood, and Malpighi was laying the framework of histology. Paré meanwhile was setting the foundation of modern obstetrics as well as surgery.

Since the physicians considered obstetrics beneath their dignity, it was the surgeons who cooperated with midwives in the management of complicated obstetrical cases. For centuries the surgeons had little learning in obstetrics and much less practical experience. There was need for a renaissance of both, and Paré with his energetic approach to teaching and his reintroduction of podalic version sparked the resurgence of obstetrics, which resulted in its rapid elevation to a medical science. Mauriceau who followed him was the first man to recognize and describe the narrowed pelvis as a hindrance to the passage of the child. He substituted the bed for the birth stool of Soranus. He described in detail an epidemic of puerperal fever, and well he might, for the ravages of that dread disease were quite apparent among the beds of the Hôtel-Dieu in Paris. He also described toxæmia and convulsions, and despite his clinical acumen postulated the causes quite erroneously.

During this time, Harvey in England advised gentleness in the art of obstetrics. Van Deventer in Holland described the differences between the

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normal and abnormal pelvis and the variations therein; while the Chamberlains in England were reluctantly bringing forth their family secret—the obstetrical forceps.

The early eighteenth century is brightened by its giants in obstetrics who began systematically to instruct both midwives and medical students. John Maubray was the first clinical instructor in Britain, although he was closely followed by William Smellie. The latter, also, clearly defined the mechanism of labour, and was the first to measure not only the diagonal conjugate but the other diameters as well. Smellie as well modified the existing forceps and designed the English lock. There were teaching centres in Europe at this time also: Baudelocque at Paris was famous. He defined the mechanism of labour and defined exactly pelvic mensuration.

While the Hôtel-Dieu in Paris had lying-in wards prior to 1739, and had run the gamut of puerperal fever epidemics on more than one occasion, only now in England were beds set aside for parturient women, at first in St. James Infirmary and shortly afterward in Middlesex. In 1745, Gosse established the Lying-in Hospital in Dublin—later known as the Rotunda, whose history since that time has been noteworthy for its low puerperal mortality and its well-defined principles of treatment. Some 20 years later, lying-in beds were established in North America—at first in Philadelphia and New York, and much later in Quebec and Montreal.

As the nineteenth century dawned, women were still dying from sepsis and hæmorrhage, obstructed labour and toxæmia. White of Manchester, Gordon of Aberdeen and Holmes in the U.S.A. were each writing on the contagion and the treatment. Later in the century, in 1847, Semmelweis found the cause and outlined the prevention of the contagion, and Pasteur isolated the organism and found it amongst the infected patients. The theory of asepsis was fast becoming accepted throughout the continents; but another 50 years were to pass before specific therapy was unearthed. The forceps were being improved and Tarnier in 1880 produced his axis-traction rods—a great boon at that time.

Cæsarean section was still a death-dealing form of therapy entailing hæmorrhage and infection. Sanger decreased the mortality by suturing both uterine and abdominal walls. The principles of Listerian antisepsis, and later of asepsis, provided a greater measure of safety in this heretofore dread operation. As well, the discovery and use of chloroform, ether and nitrous oxide as anæsthetic agents increased the comfort and the safety of both vaginal delivery and surgical obstetrics.

Near the close of this century, Roentgen's discovery of the x-ray and its clinical application paved the way for a more clearly defined visualization of pelvic capacity in relation to eutocia and obstruction, although its widespread clinical application was not defined until Caldwell and Moloy published their studies some 35 years later.

Toxæmia and convulsions were still a constant threat to the life of the woman near term or during labour. Kidney infections, nephritis, hypertension and poor nutrition were known to be associated, but the treatment was still largely empirical.

The opening of the twentieth century was marked by two widely divergent events which were undeniably important in their far-reaching effects: the discovery of the blood groups by Landsteiner, and the allotment of an antepartum bed in the Royal Maternity in Edinburgh under the direction of Ballantyne. Landsteiner's work provided the basis for the transfer of matched donor blood to a needy recipient. The First World War provided a stage for the increased use of blood transfusion and the need for improved technique. Landsteiner's delineation of the Rhesus factor in 1941 elaborated yet clarified blood grouping, typing and compatibility in transfusion. The establishment of the hospital blood bank for the collection and storage of blood and its eventual transfusion has been a direct outcome. In Alberta, since 1948, the Canadian Red Cross Society has undertaken the collection and storage of blood and has made it available to hospitals for transfusion at no cost to the patient. Surely this is a boon to the parturient who suffers ante-, intra- or post-partum hæmorrhage. Ballantyne's venture of 1901 laid the foundation for the establishment of antenatal clinics in Boston, U.S.A., in 1911; Sydney, Australia, 1912; Edinburgh, 1921, and shortly afterward in nearly all the teaching centres and large cities in the U.S.A. and Canada. In these antenatal clinics, the early signs of toxæmia were noted, hospital care and treatment was arranged and the first step in the amelioration of the severity of this complication was begun.

The establishment of the isolation unit at Rencourt Square in 1935, under Colebrook, and the advent of prontosil, and later, the sulfonamides, produced an amazing decrease. The widespread availability of Fleming's penicillin by 1943 provided the triple blow to the streptococcus and has revolutionized our treatment. The advent of the broad-spectrum antibiotics has increased the scope and effectiveness of our attack on the organisms causing puerperal sepsis. The isolation of the alkaloid of ergot by Chassar Moir in 1940, and its clinical use, have decreased the mortality from atonic uterine bleeding and provided another weapon in the struggle against sepsis and hæmorrhage.

A wider range and improved methods of anæsthesia, and the development of the transverse lower segment and the extra-peritoneal uterine incisions, have greatly extended the indications for, and the scope of, Cæsarean section. The availability of compatible blood and proper antibiotic therapy have, where necessary, increased the safety of this method of delivery enormously and have decreased the indications for premature induction of labour.



Throughout all these centuries, individuals, groups of physicians, and members of institutional bodies have contributed a great share towards the decrease of maternal crippling and mortality, but the effort of concerted groups, i.e. the Maternal Mortality Committee, has been in effect only during these past 30 years.

The Notification of Births Act was placed on the British Statutes in 1907, and again in 1915, and marked the official entrance of the public health authorities into the realm of maternal welfare. In America, the U.S. federal government established in 1915 a national notification of all births and deaths (applicable to all states by 1933); while in Canada, birth and death registration have always been under provincial jurisdiction, although the Dominion government compiles the national statistics.

Curiously enough, five separate but related events all occurred between 1928 and 1933. In Britain, Munro Kerr's book,<sup>2</sup> published in 1933, portrayed vividly the maternal deaths in England, Scotland and Wales for 1925-30 inclusive (rate 5.5 per 1000 live births, similar U.S. rates 6.7, and Canada 6.4). His book was comprehensive, and reviewed the mortality rate, the affecting conditions, the influence of death and disablement. He discussed antepartum and intra-partum care, and outlined the organization of the antenatal clinic, the maternity hospital, the midwife service, and the teaching of obstetrics to medical students.

During the same year, a similar study, i.e. the White House Conference<sup>3</sup> on prenatal and maternal care, was published in the U.S.A., consisting of 22 reports prepared by eminent American obstetricians, dealing with similar aspects for causes and prevention of maternal and fetal mortality, with recommendations. Among these was the suggestion of the need for general adoption of the international classification of causes of death and joint causes—a very potent need even today.

In the same year, a committee of the New York Academy of Medicine,<sup>4</sup> alive to this objective since 1917, published a 1930-32 survey of New York City deaths: a survey which dealt with methods of study, causes, affecting factors and preventability of maternal deaths, antepartum and intra-partum care, hospital and midwife practice and recommendations.

During the same period, Williams<sup>5</sup> in Philadelphia inaugurated a unique type of investigation (the Maternal Mortality Conference) wherein a searching analysis was made of the causes of all maternal deaths in that area, especially from the viewpoint of prevention.

Finally in Canada, in 1928, Dr. Helen MacMurchy, then Director of Maternal Welfare, suggested the organization of provincial maternal welfare committees to record, review and assess maternal deaths with the same idea of preventability in mind.

From these five related episodes has, I think, grown our modern concept of a Maternal Mortality Committee, whose organization and function I shall briefly describe.<sup>6</sup>

*Maternal death* is defined as the death of any woman from any cause, while pregnant or within 90 days of the termination thereof, by whatever means or at any period of gestation. The causes may be direct, indirect, or non-related.

*Purpose of committee.*—To collect all maternal deaths reported to the provincial or state department of statistics, or maternal health; to investigate and determine by analysis of all the involved facts, the direct, indirect, or related causes thereto; to assess each case as far as possible with regard to preventability, in order to reduce or eliminate each avoidable factor, and to assure better maternal care through improvement in teaching and practice.

*Organization and membership.*—The committee may represent any locality, and should be sponsored by the local medical society, the state or provincial medical society, the department of health and the university, preferably in unison. Its members should consist of obstetricians and general practitioners, with possibly a pathologist and anaesthetist, to a maximum of seven members. Consultants may be drawn from the university departments of obstetrics, preventive medicine, and medical specialties, hospital administrators, and possibly the department of health. There should be a chairman (an obstetrician) and an energetic remunerated secretary, who should have a definite tenure of office.

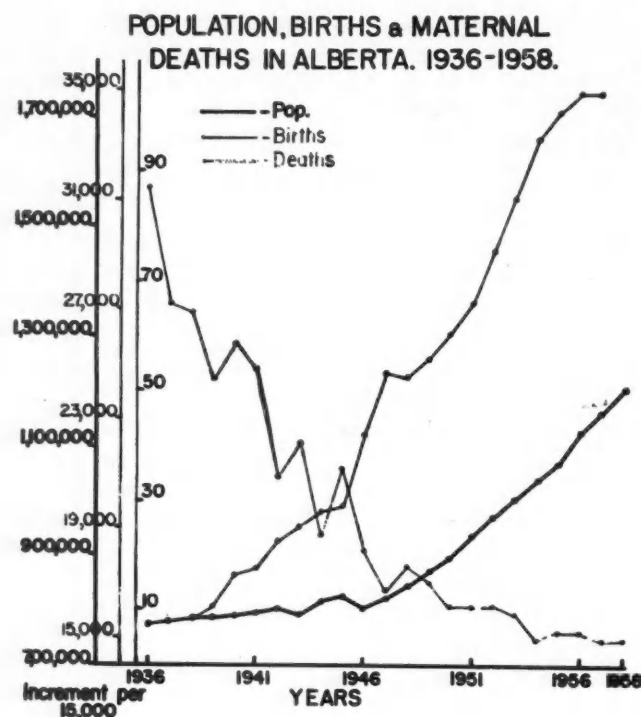
All investigated cases should be anonymous, if possible; all facts should be confidential, and all findings and recommendations should absolve the committee members from legal attack.

The committee should meet, if possible, four times each year and its budget should be met from the local or provincial medical society funds or from the department of health.

The committee's assessment of any case should provide, not criticism, but an analysis of all pertinent data which might point up preventable factors, and should be sent to the attending physician and the hospital concerned. The report, while analytical and instructive, should invite co-operation, not resistance.

The committee should prepare an annual report for the provincial or state medical society which should be read at the annual meeting and published in the medical journal. The report, moreover, should provide material for instructive papers, both for the practitioners in the area and as teaching material for medical undergraduates and for practitioners at refresher courses.

Since all maternal deaths should be classified according to the International Code, a comparison between provinces or states might be intelligently undertaken, with benefit to all.



In western Canada, maternal mortality committees have been functioning in a modified fashion since 1930. While the inquiry and the assessment have been qualitative, the effect on the doctor has been salutary and the death rate has in truth decreased.

In Alberta, the committee has been functioning since 1929, when its first report was presented. The figures to be provided relate to the period 1936-1958 inclusive. In 1936 the population was three-quarters of a million, the birth rate 20.4 per 1000 and the maternal death rate 5.8 per 1000. The pre-war and war years showed some increase in population and birth rate, but the death rate was more than halved—2.4. The post-war years saw a great boom both in population and birth rate, while the death rate decreased (1950, 0.07). Since then, the population increase has been steady, the birth rate has increased slightly and then steadied, and the death rate has decreased to and been maintained at about 0.3-0.4. This decrease in relation to increased births is most striking.

Table I illustrates the ratio between non-viable and viable gestation. It will be noted that the ratio of one to the other is relatively constant, as is the ratio of decrease in deaths.

TABLE I.—NON-VIABLE AND VIABLE DEATHS  
ALBERTA MATERNAL DEATHS, 1936-58

Year	1936-40	1941-45	1946-50	1951-55	1956-58
Total births	81,409	94,226	121,450	157,625	107,441
Non-viable	107	59	24	33	14
Viable	257	169	103	59	41
Total deaths	364	228	127	92	55

Our native Indian population has remained at about 3%, and their maternal deaths are included in the total. During the years 1936-40, this rate was about four times the average, but since the war years, it has decreased to average. Better facilities for prenatal care and more hospital beds have contributed to this decreased rate, although even yet in the northern part of the province there is need for increased facilities and for their use.

An analysis of the deaths from the four great causes, whose history I have briefly outlined, is illuminating. Improved prenatal care, more and better equipped hospital beds, earlier and more vigorous treatment of toxæmia, improved anaesthesia, safer operative deliveries, both vaginal and abdominal, availability and freer use of properly matched blood, and the use of proper antibiotics, have all contributed to this satisfactory decrease in maternal deaths.

TABLE II.—ABORTION AND ECTOPIC GESTATION,  
ALBERTA MATERNAL DEATHS, 1936-58

Year	1936-40	1941-45	1946-50	1951-55	1956-58
Total births	81,409	94,226	121,450	157,625	107,441
Abortion	91	49	18	29	14
Ectopic gestation	16	10	6	4	0

As shown in Table II, deaths from abortions, both spontaneous and induced (although the number has been relatively constant), have decreased greatly (1936-40, 91, and 1955-58, 14). The same fact applies to the deaths from ectopic gestation, although our ratio remains about the same (1 in 150 pregnancies).

TABLE III.—DYSTOCIA, SEPSIS AND HÆMORRHAGE,  
ALBERTA MATERNAL DEATHS, 1936-58

Year	1936-40	1941-45	1946-50	1951-55	1956-58
Total births	81,409	94,226	121,450	157,625	107,441
Dystocia	26	5	7	6	3
Sepsis	66	57	17	0	2
Hæmorrhage	49	42	23	12	9

Table III gives the numbers of deaths from dystocia, sepsis and hæmorrhage during viable gestation. In the years 1936-40, women died undelivered or with a ruptured uterus or hæmorrhage from version and extraction. This operation is now rarely performed. Moreover, the diagnosis of dystocia is uniformly made much earlier now with recourse to abdominal section for delivery, although our Cæsarean rate for the province has remained at about 3%. During the years 1936-45, sepsis caused about 20% of the maternal deaths. With the general use of penicillin, the rate dropped sharply and has been maintained. Available blood has contributed as well to this decrease. During 1936-45, hæmorrhage was responsible for 15% of



the maternal deaths. This rate was halved in 1946-50 and again halved in 1951-55.

It is probable that the earlier diagnosis and effective treatment of placenta prævia and abruption of the placenta, as well as decreased sedation and general anæsthesia, have contributed to this decrease. The availability of properly matched blood is also a factor.

TABLE IV.—TRAUMATIC CAUSES,  
ALBERTA MATERNAL DEATHS, 1936-58

Year	1936-40	1941-45	1946-50	1951-55	1956-58
Total births	81,409	94,226	121,450	157,625	107,441
Instrumental delivery	10	4	7	1	0
Cæsarean section	5	0	0	3	2
Rupture of uterus	4	1	0	2	1

Table IV shows that these same factors apply to the reduction of maternal deaths from trauma. The difficult and desperate forceps deliveries of the early period have gradually decreased in number and have been replaced by increasingly safer Cæsarean sections, while rupture of the uterus has, during the past 18 years (except in one instance of manipulation), been spontaneous and catastrophic.

In 1936, 75% of women were delivered in hospital; in 1956, this number was increased to 98%. A stricter regimen of weight control and decrease in salt intake advised by the doctor and adhered to by the patient, more frequent office visits and the availability of hospital beds have decreased the severity of toxæmia, although the incidence, 10%, has remained much the same.

TABLE V.—TOXÆMIA, ECLAMPSIA AND OTHER CAUSES,  
ALBERTA MATERNAL DEATHS, 1936-58

Year	1936-40	1941-45	1946-50	1951-55	1956-58
Total births	81,409	94,226	121,450	157,625	107,441
Toxæmia, eclampsia	61	33	32	16	11
Other causes	55	32	24	25	16

During 1936-45, 16% of the deaths (Table V) were associated with toxæmia and eclampsia, although the 1936-40 five-year rate was double the 1941-45 rate. During 1946-50, the number remained the same but the rate declined. The rate has been halved and almost quartered in the last eight years. It is possible that improved nutrition is a factor. We rarely see a case of fulminating toxæmia or eclampsia nowadays, and response to treatment is uniformly good. Perhaps the hypotensive drugs and the newer diuretics play a part in this improvement. It is too soon yet to evalu-

ate their effect. "Other causes" accounted for 15% of the deaths in 1935-40. Many of these were assigned from clinical assessment, as few post-mortem examinations were performed. In the last eight years, about 50% of the classified deaths have been derived from post-mortem examination. Even so, each year there are deaths which must be placed in this category although the number is decreasing yearly.

We have cause for optimism in our jousts with maternal death—but we must maintain an ever-increasing vigilance. Not only have we the spectres, dystocia, hæmorrhage, sepsis and toxæmia, to watch for and guard against, but we have infectious hepatitis, embolic phenomena, heart disease and the toll of accidents on our crowded highways to prevent us from achieving that irreducible minimum of maternal wastage and crippling. We have, as well, the necessity to stimulate and educate each nurse and medical student, to reprimand each practitioner and specialist, and to initiate and maintain the interest and co-operation of each pregnant woman, whatever be her economic status. We must, as well, improve the precision of diagnosis and relate thereto the medical, environmental and socio-economic factors; and then stimulate the necessary modifications of care and clarify these procedures. Such is our single duty as obstetricians and our collective duty as possible members of a maternal mortality committee.

Our provincial Perinatal Mortality Committee's analysis of intrauterine, stillborn, and neonatal deaths has yielded the important finding that about one-half of these fetal deaths are associated with a problem arising from a possibly or actually avoidable factor during the ante- or intra-partum state. And so, by improving maternal care we are increasing the fetal salvage.

Truly this is preventive medicine at its best, and singly or collectively we must strive to maintain this vital principle.

#### SUMMARY

There has been outlined, sketchily, the history through the ages of the four factors, disproportion, bleeding, sepsis and toxæmia, and man's attempt to prevent or treat them successfully and so decrease maternal mortality. The early history of antenatal care and the part played by the publications of 1930-33 in the formation of the modern-day Maternal Mortality Committee have been noted. A brief outline of the definition, possible organization and function of such a committee has been given. Tables pointing out the reduction in maternal deaths in the Province of Alberta during the years 1936-58 have been included, and some factors relating thereto have been presented. A plea is made for the continuation of the vigilant Maternal Mortality Committees and allusion is made to their part in the decrease and prevention not only of maternal, but also of perinatal deaths.

May I record my thanks to the Alberta Maternal Mortality Committee for permission to use their figures.

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## RÉSUMÉ

L'auteur retrace l'histoire à travers les temps des quatre facteurs qui affectent la mortalité maternelle: à savoir, la disproportion céphalo-pelvienne, l'hémorragie, l'infection et la toxémie. Il souligne aussi les efforts déployés par la médecine pour les prévenir ou les traiter. L'hygiène

publique a reconnu l'obstétrique en Grande Bretagne par l'introduction de la loi de la notification des naissances en 1907. Les publications de Munro Kerr, la conférence de la Maison Blanche sur les soins de la grossesse, le rapport du comité de l'Académie de Médecine de New-York sur la mortalité maternelle dans cette métropole, les recherches de Williams à Philadelphie et enfin, l'organisation au Canada des comités de bien-être maternel à l'instigation du Dr Helen MacMurchy ont préparé les voies à la formation de cette entité médicale moderne qu'est le Comité de mortalité maternelle. L'auteur présente ses vues sur l'organisation et les fonctions d'un tel comité. Les fluctuations dans la mortalité chez le fœtus viable et non-viable, la fréquence des avortements, des grossesses ectopiques, les tendances de la mortalité résultant de la dystocie, de l'infection, de l'hémorragie, des traumatismes, de la toxémie et de l'éclampsie sont présentées sous forme de tableaux. Ces chiffres ne s'appliquent qu'à la province d'Alberta pour la période de 1936 à 1958, par tranches de cinq ans. Malgré l'optimisme que peut inspirer le progrès accompli dans ce domaine tel que nous le montrent les chiffres de ces tableaux, l'auteur recommande de pratiquer une vigilance prudente car ce n'est qu'à ce prix que l'avancement pourra continuer.

# THE EFFECTS OF CONTROL PROGRAMS ON CANCER MORTALITY\*

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THE DEGREE of control of cancer mortality achieved through control programs was appraised tentatively and grossly some years back through consideration of officially recorded age-sex specific mortality from all cancer (combined) along with other relevant data. The reason for using age-sex specific rates is that they, and only they, show differences between age-sex groups, and such differences are not only essential to the picture but are often essential to appraisal of the degree of reliability of the records. The reason for using the data for all cancer (combined) instead of those of specific sites—stomach, corpus uteri, cervix uteri, etc.—is that the data for all cancer (combined) are free from the errors associated with the difficulties of diagnosis, certification and classification of the site of the primary lesion. (The probably much smaller error from confusion with conditions other than cancer cannot be eliminated at present.) The recorded mortality rates from all cancer (combined), in females, showed some declines; some of the declines were fairly well defined, others indefinite, irregular and inconsistent. But there was no evident correlation between these declines and the control programs. On this lack of correlation *along with other pertinent considerations*, it was concluded that—"real or artificial, or to a large extent real, or expanded reasonably to allow for vagaries in vital statistics and whether or not representing declines in some cancers or a pro-

portionately larger decline in some one cancer, the recorded declines are patently incompatible with the optimistic promises of propaganda. . . ."

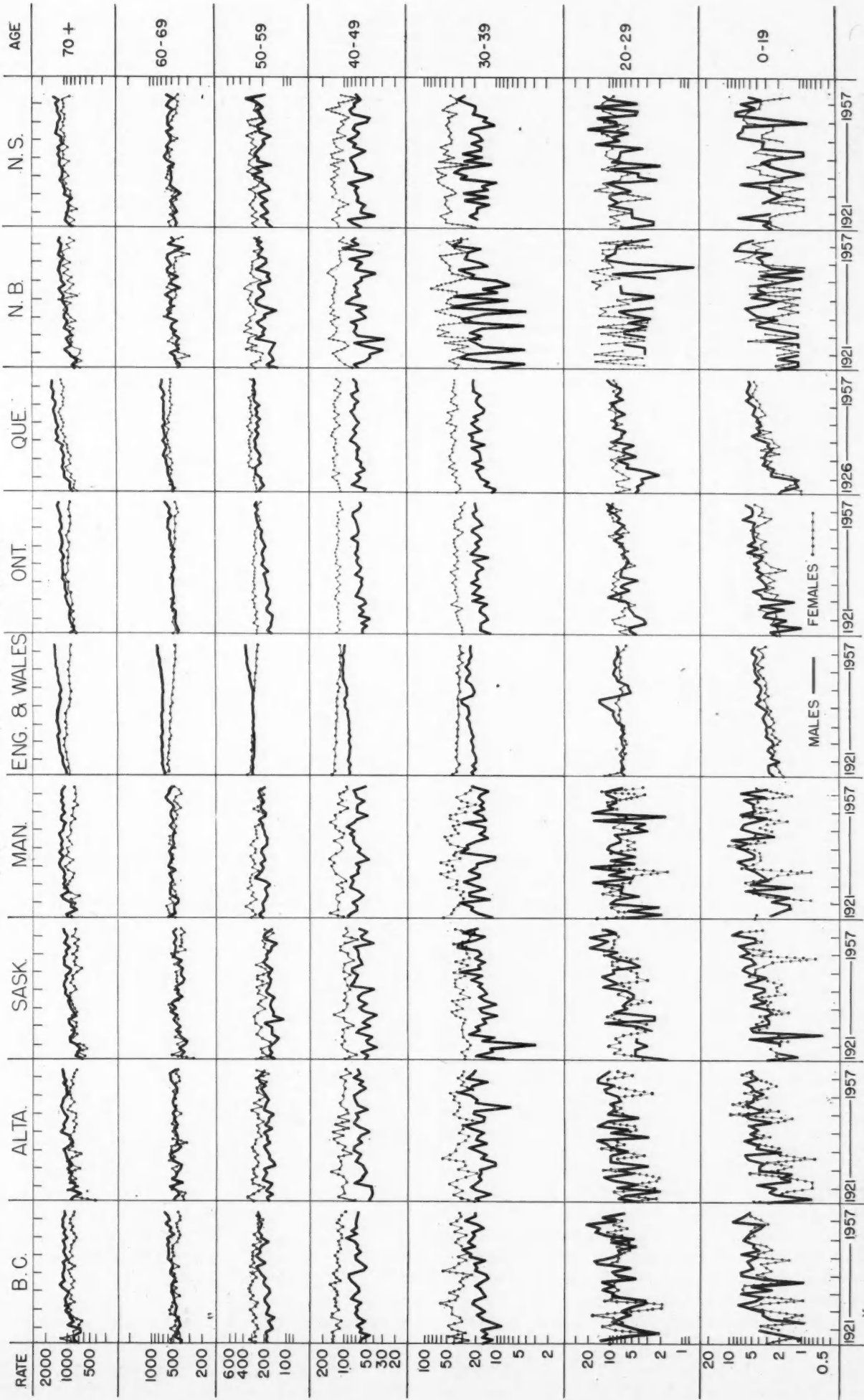
Advantage can now be taken of an additional 10 years' experience. The recorded mortality rates from all cancer (combined) for eight provinces of Canada and for England and Wales to 1957 are shown in Fig. 1. Unfortunately, the increase in mortality charged to cancer of the respiratory system, which was a disturbing factor in previous analyses, has now become an almost insurmountable barrier (see Fig. 2). How much of the increase is real, how much attributable to shifts in diagnosis or certification from cancer of other sites, and how much attributable to shifts from other conditions is still a question. As the recorded increases have been much greater in some places than in others, and greater in males than in females, the three possible factors mentioned might not contribute the same proportions in different places. In some, a large part of the recorded increase might be contributed by a shift in diagnosis from conditions other than cancer; in others, the whole or a large part might be real. Thus, not only does the increase in recorded respiratory cancer mortality interfere with direct comparisons of the mortality from all cancer (combined), but it is of such uncertain and probably variable character that reasonable allowance cannot be made for it at present. Without assuming that subtraction of the respiratory cancer mortality from that of all cancer achieves either reliability or comparability of the remainder, that subtraction has been made in Fig. 3.

It is apparent in the graphs that, despite marked differences between the various Canadian provinces in the duration, intensity and costs of their control programs,<sup>1</sup> there are no corresponding consistent differences between them in either the magnitude

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CANCER & OTHER MALIGNANT TUMOURS\*  
(MORTALITY RATES PER 100,000)



\* LESS-HODGKIN'S DISEASE, LEUKAEMIAS & ALEUKAEMIAS

Fig. 1

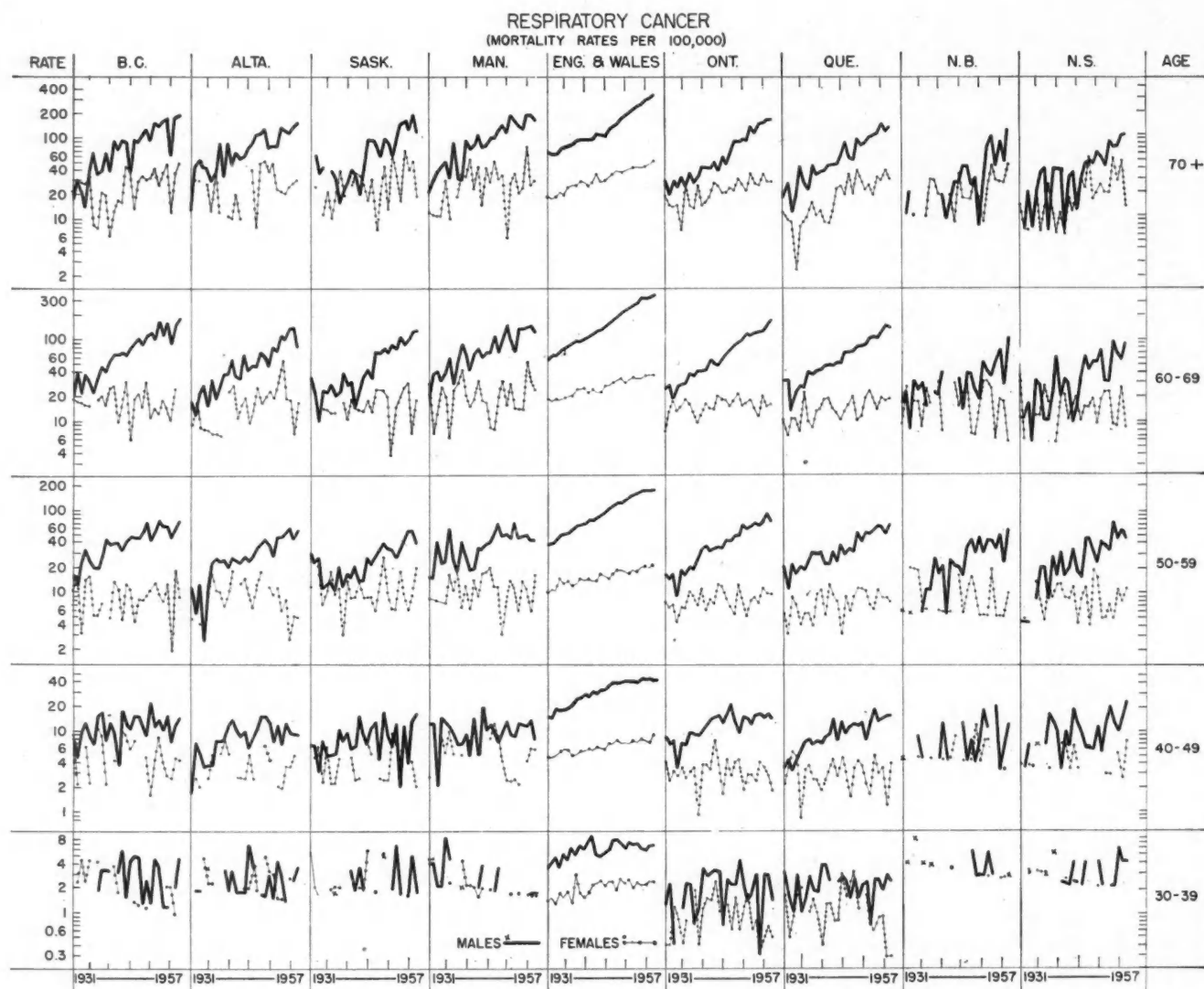


Fig. 2

of the cancer mortality rates or in the trends. There are marked differences, however, between the Canadian data and those of England and Wales. The rates in females in England and Wales for all cancer (combined), and more so for all less respiratory cancer, show greater and more regular and consistent declines than are apparent in the Canadian data. Increases in the English rates from respiratory cancer in both sexes are greater than in the Canadian rates. In the mortality charged to cancer other than respiratory in England and Wales, the rates in males show declines of approximately the same extent as those in females, while the corresponding Canadian rates tend to hold nearly level. These differences immediately point the question of the reliability of both the Canadian and the English records, but they do not necessarily condemn either. The differences could possibly be real and attributable to several factors, e.g. to differences or changes in social customs or environments which might influence the incidence of certain cancers, such as breast, uterine, bladder, respiratory and possibly others; to indirect effects of changes in other diseases, etc. At the moment, however, no amount of speculation can satisfactorily

appraise the actual degree of reality in the rates or in the differences between them, and such appraisal is a prerequisite to interpreting the recorded declines. In the meantime it is to be noted that neither the similarity of the trends in Canada, nor the differences between them and those in England and Wales, nor the near equality of the declines in males and females in the mortality charged to all cancer other than respiratory in England and Wales would be expected from the various programs that were or were not in operation.

There is another angle from which the situation may be considered. Had there been gains in the past 10, 20 or 30 years commensurate with the hopes and expectations on which the control programs were based, would those gains have been obvious in the records of mortality of all cancer (combined), despite the patent unreliability of the data of constituent specific internal sites and the uncertainty of the total? While any attempt to answer this question must be somewhat speculative, it is salutary to recall that the recorded mortality in breast cancer truly reflected the failure of control programs to reduce that mortality materially, if at all, and pointed to the error in the then



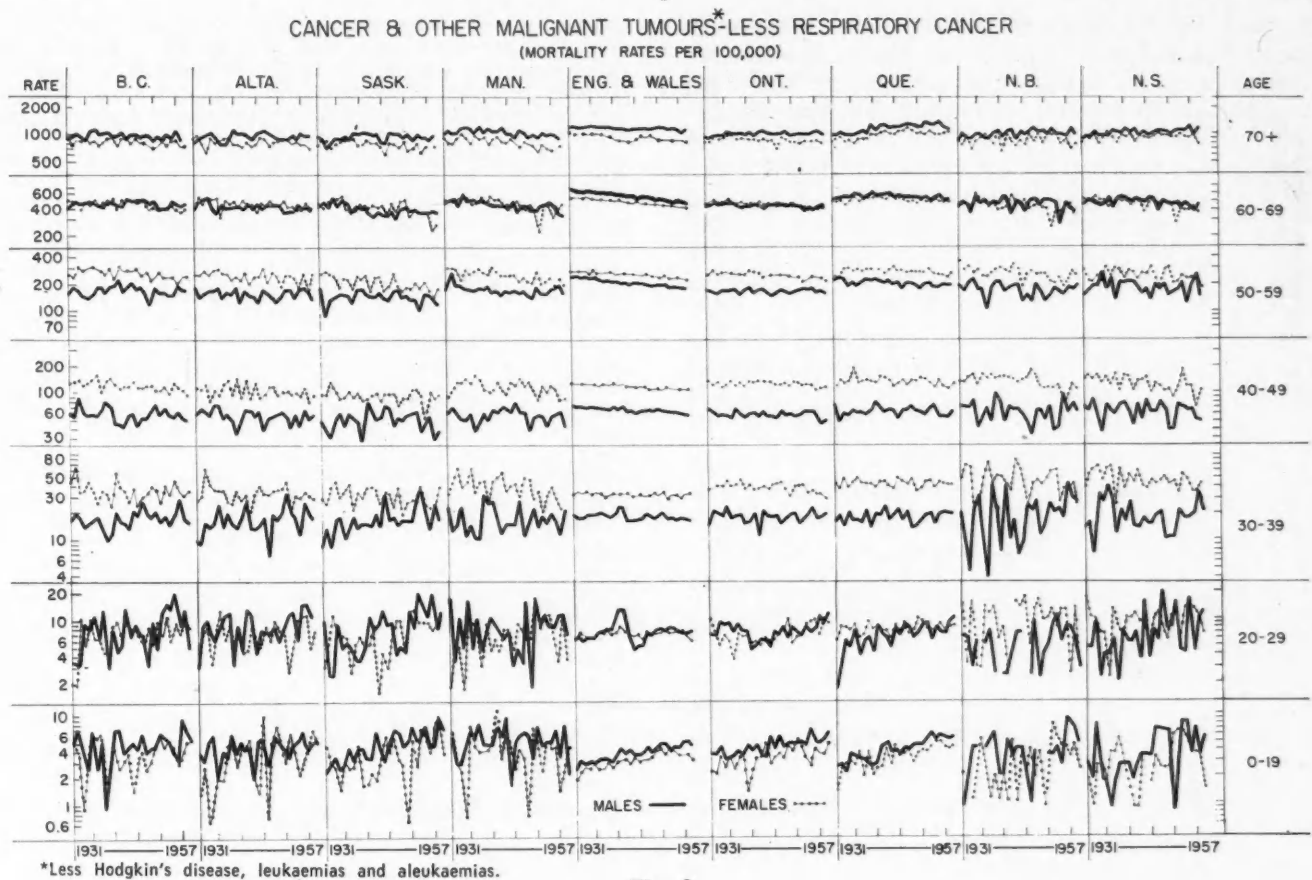


Fig. 3

current concepts of both capacity and achievement. Further, in many other conditions or groups of conditions (the grouping made, as here, so as to reduce as far as possible errors from obvious overlapping and other difficulties in diagnosis, certification and classification), time and events have proved that the recorded rates provided a reasonable reflection of the actual situation. Effects from measures now recognized as effectual and the lack of effects from measures now recognized as ineffectual were clearly shown. Thus, the established reasonable reliability of the records of many important causes of death suggests that, if there had been reductions in all cancer mortality at all commensurate with the hopes and expectations of control programs, with their costs and their propaganda, those reductions and their correlation with the programs would have been obvious in the record.

From another field, too, there is suggestive evidence that control programs would have little influence on the mortality from metastasizing cancer. The recent demonstrations of cancer cells in blood and bone marrow cast doubt on the validity of the basis of all cancer control programs, i.e. the hypothesis that spread from the original site is delayed at first and confined largely to the regional lymphatics, with remote spread later from the lymphatic involvement, early blood-borne spread from the original lesion occurring only rarely. Doubt cast on the validity of this hypothesis must cast doubt on the expectations based on it. To the

same end the lack of correlation between duration and stage in cervical cancer as in breast cancer is becoming more generally recognized.

Thus, the additional experience of another decade does not appear to warrant any material modification of the previous tentative conclusion.

Again it must be emphasized that this does not mean that treatment avails nothing. Although there is no certain evidence that mortality from any metastasizing cancer can be prevented, there is abundant evidence, it is thought, that appropriate local treatment of cancers of many internal sites may materially postpone death and provide for a period of more comfortable and useful life.

#### SUMMARY

In a previous survey it was concluded, from recorded age-sex specific mortality of all cancer (combined) along with other pertinent considerations, that there might have been some reductions in mortality from cancer of more than one site or a larger reduction from cancer of some one site, but, as the recorded declines failed to show any correlation with control programs, there was no assurance that the programs had determined those declines or had otherwise materially reduced cancer mortality.

The recorded experience of an additional 10 years has now been included. Continued increase in mortality charged to respiratory cancer complicates the difficulties of analysis. Previously indefinite declines in recorded cancer mortality in females have become more definite and previously definite declines have increased in extent, but the declines still do not cor-

respond with the programs. There is some evidence to suggest that if the programs had been effectual the consequent reductions in cancer mortality and their correlation with the programs would have been obvious in the records. Further, the recent demonstrations of cancer cells in blood and bone marrow suggest that the basis for all control programs is invalid. So, too, does the lack of correlation between duration and stage. Thus the additional experience of another decade does not appear to warrant any material modification of the previous tentative conclusion.

It must be reiterated that treatment of metastasizing cancers of internal sites may give material postponement of death, even though it does not prevent it:\*

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## RÉSUMÉ

Au cours d'une enquête antérieure et d'après les chiffres de mortalité de tous les cancers ainsi que d'autres con-

siderations pertinentes, nous avons conclu qu'il y avait peut-être quelque diminution dans l'ensemble des affections cancéreuses ou une diminution plus marquée du cancer d'un seul organe. Les diminutions cependant ne correspondent à aucune corrélation avec les programmes de contrôle, si bien qu'on ne peut affirmer que ces programmes aient déterminé ces diminutions ou aient contribué à réduire de quelque manière la mortalité par le cancer. Les chiffres d'une autre décennie sont maintenant inclus. L'augmentation constante de la mortalité par le cancer des voies respiratoires complique la difficulté de l'analyse. Certaines tendances vagues vers la baisse dans la mortalité du cancer chez la femme se sont confirmées et les baisses déjà établies se sont affermies mais encore ces tendances ne correspondent pas aux programmes. On a raison de croire que si ces programmes avaient eu quelque portée la diminution dans la mortalité aurait paru dans nos relevés. La démonstration récente de la présence de cellules cancéreuses dans le sang et la moelle laissent entendre que les programmes de contrôle ne reposent pas sur un principe valide. Il en va de même pour le manque de corrélation entre la durée et le stage. L'expérience accrue d'une autre décennie n'offre aucune raison de modifier les conclusions suggérées antérieurement. On doit réitérer que le traitement des métastases cancéreuses d'une lésion primaire interne peut sensiblement retarder la mort sans cependant la prévenir.

**A STUDY OF ENURESIS, USING  
PROPANTHELINE BROMIDE  
(PRO-BANTHINE\*)  
INCLUDING A NOTE ON  
UROLOGICAL INVESTIGATION OF  
URINARY INCONTINENCE†**

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A SERIES OF CHILDREN with enuresis treated with posterior pituitary extract given by nasal insufflation was reported in the *Canadian Medical Association Journal* of December 1, 1958. This further study includes a résumé of bladder physiology, the report of a trial of propantheline bromide (Pro-Banthine) therapy, a social report by the public health nurses, and a surgical investigation of resistant cases.

The definition of enuresis which has been used in this study is the presence of involuntary micturition, nocturnal or diurnal, after the age of four years, in the absence of organic, urological or neurological disease.

## PHYSIOLOGY

Infants void at frequent intervals with a forceful stream, and as the bladder capacity increases with

age, the interval between voiding increases. The bladder has a capacity of 30-60 c.c. in the newborn and 200-550 c.c. in the adolescent.

The impulse to micturate is initiated by increased intravesical pressure. This impulse is carried through the sympathetic and parasympathetic nervous systems, causing the contraction of the bladder and relaxation of the sphincters, resulting in the passage of urine. The bladder neck and external sphincter mechanisms prevent urine from dribbling from the bladder continuously.

Normally, by three to five years of age, cortical development has taken place which inhibits reflex urination when the bladder fills. Reflex urination can also be controlled to some degree by anticholinergic drugs which delay the passage of impulses through the sympathetic and parasympathetic nerves to the smooth muscles.

Propantheline bromide is a long-acting anticholinergic drug with low toxicity and is effective when given orally. Amongst the toxic effects of the drug are dryness of the mouth, blurring of vision and decrease in gastro-intestinal motility.

Braithwaite<sup>1</sup> found propantheline bromide of value in the treatment of enuresis. In a series of 33 children, using a dose of from 15 to 45 mg. divided into three doses, he reported a 50% improvement. Leys<sup>2</sup> found the drug of limited value only, in 65 cases ranging from five to 15 years. Holt,<sup>3</sup> prescribing 60 mg. at bedtime, encountered toxic effects in 18% of his cases, but used a higher dosage than is normally recommended.

It was felt that a study of this drug, using a dosage based on the weight of the patient and given at bedtime for the control of enuresis with minimal side effects, would be of value.

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#### INVESTIGATION

Each patient was seen four times over a three-month period, visits being spaced one month apart. Treatment consisted of a four-week period of observation, a four-week period on placebo, and a four-week period on propantheline bromide. The placebos used were an exact external duplicate of propantheline bromide in appearance and taste. The order followed in each case was determined by the method of random sampling drawn up by the hospital statistician. The drug was given at bedtime in the following dosage: children weighing 50 lb. or less, 15 mg.; between 50 and 100 lb., 30 mg.; and over 100 lb., 45 mg.

Fifty-nine patients were referred to the enuretic clinic at the Hospital for Sick Children from the outpatient department and directly from private physicians; all had had a history taken, a physical examination, and urinalysis. No known past illnesses or apparent physical deformities could be considered contributory to the problem. Before coming to clinic, most had had a trial of restricted fluids after supper, and of lifting or waking during the night; about half had been given various medications such as atropine, adrenaline, amphetamine sulphate or phenobarbital, without lasting improvement.

Investigation included a review of history and physical examination, repeated urinalyses, intravenous pyelography, cystography, and where possible, voiding urethrography. Of the 59 patients who started to attend the clinic, 10 were dropped from the series because of intercurrent illness or because of rapid improvement during treatment and failure to return to the clinic. Another 10 children were referred to the urological clinic because of persistent diurnal and nocturnal enuresis. Thus 39 children were left who completed the entire investigation. Repeat urinalyses were negative except for one child who had pyuria in one specimen.

In view of the inconveniently early hour of the clinic (8 a.m.), and from the results of questioning the parents, it was felt that the parental attitude was one of interest and concern with the problem.

The completed series comprised 21 boys and 18 girls, ranging in age from 6 to 14 years with an average age of 9.1 years.

According to the Harvard School of Public Health standards, 33 children were considered to be of normal height and weight. Six children, three male and three female, were slightly outside weight limits for normality. Thirty-three children were in the normal school grade for their age, and six were one grade below normal.

The ages of both parents were recorded. It is interesting to note that 75% (58) of the parents were between the ages of 30 and 40 years, 20% (16) between 41 and 50 years, and the remaining 5% (4) were under 30 or over 60 years of age.

Sixty per cent (23) of the fathers were labourers, 30% (12) tradesmen, and 5% (2) professional;

5% (2) of the fathers were deceased. From a financial point of view, they were definitely in the lower income group, although a few non-clinic patients were sent directly to us from their private doctors. Some 15% (6) of the children were wards of the Children's Aid, 15% (6) were new Canadians, and 7% (3) of the parents were divorced or separated. A history of enuresis in the immediate family, uncles, aunts or cousins was found in 65% of the children in this series.

Twenty-two per cent (9) of the children showed signs of psychological disturbance, such as nail biting, excessive aggression or introversion. All but one of these children had an abnormal home environment. In evaluating family groups, there was an equal distribution of the problem among the youngest, the eldest and the middle child.

Fifty-four per cent (21) of the children were day-trained by two years of age, 72% (28) by three years of age, and 82% (32) by nine years of age. The children were considered night-trained when they had demonstrated control for at least six months. Fourteen per cent (5) of the whole group had been night-trained at one time but later developed nocturnal enuresis.

There was a history of urgency in 52% (20) of the cases, 30% (12) complained of dribbling, and 10% (4) had frequency. All the children voided with a normal force of stream, as far as the mother could observe. The majority had no trouble in stopping part way through micturition. The volume of urine collected during the day and measured by the mother on two or three days during the period was considered within normal limits for age.

The time of bed-wetting was observed on several occasions by the parent. It would appear that there is a group of children who void once, two or three hours after going to sleep; another group who void six hours after going to sleep; and a mixed group who void in no fixed pattern.

The depth of sleep was measured by asking the parents to ascertain which of the following stimuli was necessary to arouse the child from sleep at approximately the time bed-wetting usually occurred. The required stimulus is listed below, followed by the percentage who fell into that category.

- Removing the bedclothes — 13% (5).
- Sitting the child up — 32% (13).
- Standing the child up — 26% (10).
- Making the child walk — 21% (8).
- Unable to waken the child — 8% (3).

Although only 39 patients completed this study, intravenous pyelography and cystography were carried out on 56 patients. The patients who did not complete this study dropped out for various reasons explained earlier. Urethrograms were taken in ten cases. Thirteen per cent (7) showed some abnormality. Approximately half of these (4) were cases of spina bifida occulta. The remainder in-

cluded a hypermobile kidney, a double left ureter, and a foreign body.

In order to evaluate the effectiveness of the propantheline bromide, results were compiled as follows: The pre-treatment frequency of enuresis (percentage of wet nights) was estimated by careful questioning of the parents. A daily record of wet or dry nights was kept by the mother during the three-month period of treatment. At the conclusion of the study, the percentage of wet nights for each month was correlated with the form of treatment used. Evaluation of therapy was based on the percentage of wet nights in the pre-treatment period plus the percentage of wet nights on placebo, plus the percentage of wet nights on no medication, divided by three, minus the percentage of wet nights on propantheline bromide. Thus, if the percentage of wet nights remained unchanged during the whole period, the score was 0. If the child had an average of 60% wet nights for the period of pre-treatment, no medication and placebo, and 50% wet nights on propantheline bromide, the score was +10. A score of -6 or less was considered as worse; from -5 to +5 as unchanged; from +6 to +25 as slightly improved, and over 25 considerably improved. Results appear in Table I.

TABLE I.—RESULTS OF STUDY WITH PROPANTHELINE BROMIDE (PRO-BANTHINE)

No. of patients and percentage	-6 or less		-5 to +5		+6 to 25		26 and over	
	7 18%		16 41%		11 28%		5 13%	
Male Female Male Female Male Female Male Female								
Ages								
6-8	3	3	3	2	2	1	1	1
9-11	-	1	7	4	2	3	-	1
12-14	-	-	-	-	2	1	1	1
	3	4	10	6	6	5	2	3
Totals	7		16		11		5	

It is seen from Table I that 41% of the children showed improvement, and 41% remain virtually unchanged. Children in the oldest age group (12-14 years) all improved. Those in the youngest age group (6-8 years) include almost all those who became worse under treatment. Since the majority of the children in the series were in two younger age groups, the over-all improvement was much less than if each of the age groups was equally represented.

DISCUSSION

The slight preponderance of males in this series bears out the generally accepted idea of an increased incidence of enuresis in boys.

The group seemed to be an average cross-section with regard to mental and physical development, and their parents were representative of the general population from an occupational point of view but were in the lower income bracket. A large proportion of the children did not have the security of a normal, well-established home. The incidence



Fig. 1.—Bilateral hydronephrosis and hydroureter due to bladder neck obstruction in a 13-year-old boy.

of enuresis in other members of the family (65%) was much greater than is found in the general population.

The children showed an increased incidence of minor psychological disturbances. They were slower in achieving day-time control of their bladder than normal children. Those children who had lost night control, after being dry for a period of at least six months, present a different problem from those who have never been night-trained. More detailed investigation of these cases is indicated, as psychological factors frequently play a larger part in their problem than in those who have never been dry at night.

Urgency, dribbling and frequency, in that order, occurred more often in the children in this group than in a normal group of children. However, there seemed to be no relation between the presence or absence of these signs and the response to treatment.

The children as a group slept more soundly than average children and were, as a result, much more difficult to rouse. This might well be a factor in delaying control of the bladder during sleep.

The finding of a 13% incidence of x-ray abnormalities was checked with the chief radiologist, who considered this figure to be within normal limits for an average group of children. The urinary



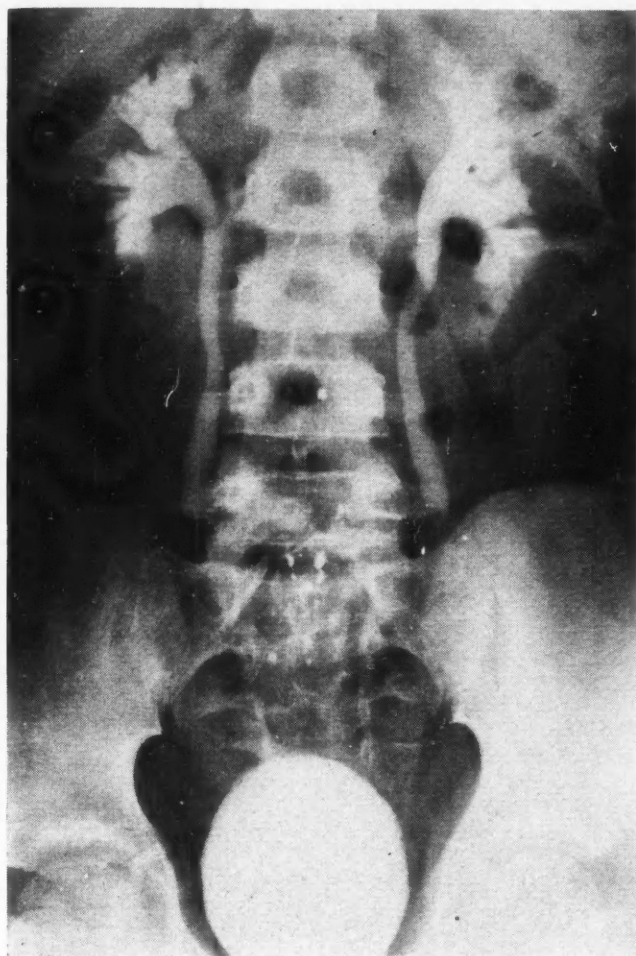


Fig. 2.—Spina bifida occulta with associated cord lesions causing neurogenic bladder in a 6-year-old girl.



Fig. 3.—Left ectopic ureter. Intravenous pyelogram does not show the part of left kidney and its ureter which drains at vaginal orifice.

function of those children with x-ray abnormalities did not seem to be affected in any way.

Propantheline bromide given at bedtime in the doses described appears to benefit chiefly the older age group (12-14 years) and to be of no help in the younger age group (6-8 years). However, it must be borne in mind that the normal expected improvement in nocturnal enuresis is much greater in older children. It is unfortunate that more older children were not included in the study, but in many cases as soon as any real improvement was shown the child stopped coming to the clinic.

#### UROLOGICAL INVESTIGATION

When first seen the incontinent child must be examined to ascertain whether organic urological or neurological disease is present, or whether he belongs to the group with functional incontinence defined as enuresis.

The finding of pyuria, pyrexia, hæmaturia, dysuria and abdominal pain in association with incontinence immediately indicates that organic disease is present. The early signs of organic disease causing incontinence are not always so obvious. Frequency, urgency and precipitancy, which are common symptoms in enuresis, are also symptoms of infection, obstruction and neurological imbalance. Thus when a child presents with incontinence, it is mandatory that he be carefully screened for organic disease before the diagnosis of enuresis is made.

The newborn and the infant void at intervals with a forceful stream in response to bladder filling. Continuous dribbling, poor force of stream, or an unduly small stream cannot be overlooked in this period. Details of bladder function during early years should be sought from the parents of incontinent patients. The 13-year-old child whose pyelogram is shown in Fig. 1 had symptoms of this nature from birth to 18 months, but, as predicted, he "grew out of them". When seen at the age of 13 he presented with azotæmia, pyuria, bilateral hydronephrosis and advanced pyelonephritis due to long-standing bladder-neck obstruction.

Neurological lesions causing incontinence will usually be apparent, but occasionally incontinence is the predominating symptom and the neurological defect is uncovered only in the course of investigation of incontinence. The cord lesion associated with the spina bifida occulta in Fig. 2 was sufficient to produce an uninhibited neurogenic bladder with frequent and precipitant micturition.

Bladder fistulæ, ectopic ureters in the female, accessory urethra and sphincter disturbances associated with epispadias cause stress incontinence or continuous dribbling and will raise suspicion at an early age. The presence of an ectopic ureter keeps the child damp much of the time. By observation of the vulva, the ectopic opening can sometimes be seen or the continuous dribbling detected. The



Fig. 4.—Retrograde injection of left ectopic ureter. Demonstrates the fourth ureter in this patient.

demonstration radiographically of the ectopic ureter is sometimes difficult, because hydronephrosis and pyelonephritis interfere with the concentrations of opaque dye by the ectopic segment. Fig. 3 is an intravenous pyelogram which clearly indicated that three ureters were emptying into the bladder. The left ectopic ureter injected from the vulva, seen in Fig. 4, is not seen in Fig. 3.

Fæcal soiling in association with incontinence may be functional. It frequently accompanies a neurological deficit in both vesical and anal sphincters. Obstructive uropathy necessitating the use of accessory muscles to supplement detrusor contractions may be complicated by both urinary and fæcal incontinence.

The child who reverts to incontinent behaviour after a period of control cannot be assumed to be suffering from a functional condition until after investigation. Fig. 5 is an excretory cystogram of a child who was completely trained between the ages of two and three and yet developed nocturnal incontinence, progressing to continuous dribbling by the age of four. This child had severe obstruction at the bladder neck.

Most children with incontinence have true enuresis, and those with organic disease usually can

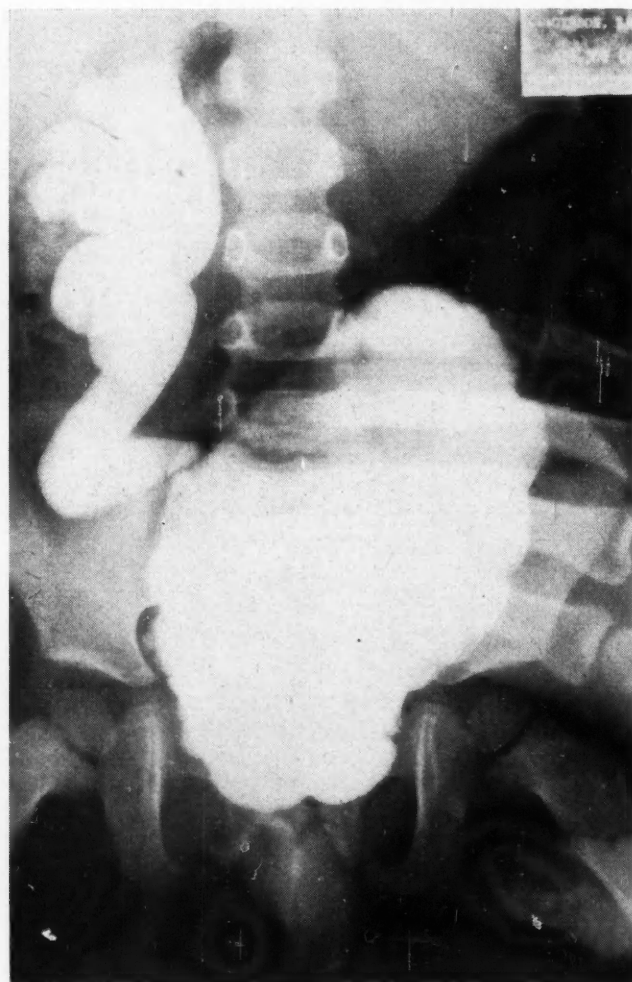


Fig. 5.—Expression cystograms in 4-year-old boy with bladder neck obstruction showing trabeculation, reflux, hydroureter and hydronephrosis.

be readily recognized. All, however, should be assessed to exclude organic disease. The assessment should include a careful history of urinary function from birth and a detailed inquiry into the type of incontinence and any associated symptoms. Neurological examination and observation of the urinary stream should be part of the physical examination.

A negative urinalysis, sterile urine culture and a normal intravenous pyelogram with pre-voiding and post-voiding films, in the absence of symptoms or signs of organic disease, will allow a diagnosis of enuresis to be made in the incontinent patient.

Should abnormalities be detected by the initial investigation or should enuresis be unduly prolonged, then cysto-urethrograms, cystometrograms and cysto-urethroscopy may be indicated to investigate further the lower urinary tract and its function.

During the past year, ten cases of persistent enuresis have been investigated by cystometry and cysto-urethroscopy, at the request of the enuresis clinic. Cystoscopy, urethroscopy and vaginal endoscopy failed to reveal any causative lesion. A cystometrogram suggested a small bladder in four cases, though no infection or obstruction was demonstrated. No neurological lesion producing a neurogenic bladder was discovered as a result



of cystometry in these ten patients. One child was noted to have bacilluria before examination and developed acute cystitis after instrumentation.

#### SUMMARY

Thirty-nine children with nocturnal enuresis were investigated and their social background was reviewed. These children showed no demonstrable anatomical defects which seemed relevant to their enuresis. Their social background and the increased family incidence of enuresis presented factors which probably play a part in causing enuresis.

Propantheline bromide was given to 39 children with nocturnal enuresis at bedtime in doses varying according to age. Children between the ages of 12 and 14 years all showed definite improvement. The younger age group were not helped by this form of therapy.

Ten additional children were referred to a urological clinic because of persistent diurnal and nocturnal enuresis. A small bladder was demonstrated in four children, and this may have been a factor in causing the enuresis. The indications for urological investigation of incontinent children and some of the abnormalities found are described.

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#### RÉSUMÉ

Le présent article fait suite à une étude sur l'énurésie publiée antérieurement dans ce journal par les mêmes auteurs. On a étudié un groupe de 59 enfants référés pour énurésie à l'Hôpital des Enfants Malades de Toronto. De cette série, 10 durent abandonner le traitement pour causes diverses et 10 autres porteurs de lésions furent envoyés à la clinique d'urologie pour traitement spécialisé. Des 39 qui demeurèrent, on comptait 21 garçons et 18 filles dont l'âge moyen était de 9.1 ans. Il est intéressant de noter que 65% des cas de cette série possédaient des antécédents familiaux d'énurésie parmi les oncles, les tantes et les cousins; 22% manifestaient des troubles psychologiques. On n'a pu découvrir chez ces enfants de malformations anatomiques qui pourraient avoir une portée quelconque sur leur incontinence. Tous reçurent au coucher du bromure de propantheline en doses variant selon les âges. Le traitement a correspondu à une amélioration chez les enfants âgés de 12 à 14 ans; les plus jeunes ne semblent pas avoir profité de cette forme de thérapie. Quatre enfants possédaient une vessie plus petite que normale. Si l'on se rappelle que la capacité vésicale du nouveau-né varie de 30 à 60 cc. et qu'elle atteint 200 à 550 cc. chez les adolescents, une petite vessie pourrait devenir un facteur dans l'étiologie de leur énurésie. Les auteurs terminent en fournissant les indications pour les recherches urologiques que l'on doit pratiquer chez les enfants incontinents; ils décrivent aussi les anomalies que l'on peut s'attendre à trouver.

## Special Article

### NEW VIEWS ON THE NARCOTIC PROBLEM\*

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*There is no country, certainly in the western hemisphere, in which drug addiction is dealt with as a definite disease. In Canada, at any rate, drug addiction, where possession of the drug is proved, is a criminal offence and as such receives basically only punitive "treatment", which in effect is no treatment at all.*

*The profession has never made a concerted effort to introduce a scheme of treatment of addiction, but at least it may be said that there has not been so far the necessary integration of the legal and medical aspects to make it possible. Until supervision can be enforced, no medical scheme can deal effectively with the addict. But on the other hand, some such scheme should be put forward. The urgency and difficulties of the problem; the need for integration of the medical and legal aspects; and a suggested plan by which medicine can give to the addict the help that medicine alone can give: these are the points well brought out in the following paper.—Editor.*

#### WHAT IS ADDICTION?

DRUG addiction exists when a person's behaviour and way of life are determined by his dependence on and the availability of narcotic drugs which are harmful to him and hence to society.

Administratively there are three general classifications of addicts. First are those called medical addicts who have become addicted as a result of a medical condition in which drugs have been legitimately administered for the relief of pain. Secondly are a number of persons called professional addicts, medical practitioners, nurses, dentists and veterinarians, who, having access to the drugs, have become addicted to them. The third group with which we are concerned consists of those who obtain their supply from the illicit market and are called criminal addicts.

It is essential to differentiate between the first trial or use of drugs and the actual causes of addiction which are apparently psychological, physiological and pharmacological. It is unlikely today that the initial contact with drugs for the criminal addict is through legitimate medical treatment. Initiation usually occurs in a social situation through association with users. Pedlars are most wary of supplying anyone not known to them, because of the danger of apprehension and conviction. Hence the first "shot" is usually obtained in an encounter with addicts at a party, through prostitutes, or through introduction to a "pusher" by someone who will vouch for his curiosity and his fraternity with the criminal fringe.

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### HOW MANY ADDICTS HAVE WE?

The statistics presented in 1955 to the Senate Committee on the "Traffic in Narcotic Drugs in Canada" indicated a known addict group of 3212 persons comprising 515 medical addicts, 333 professional addicts and 2364 criminal addicts. Because of the legal sanctions, addicts do not willingly reveal their identity, and since three years have elapsed it must be assumed that these figures would not exaggerate the present situation.

In the same enquiry it was revealed that of the 2364 criminal addicts, Montreal was known to have some 200, Toronto about 400 and Vancouver about 1100. The balance are presumably either in prison or in other areas probably adjacent to these cities. It is common to rationalize the large number in British Columbia as being due to easier living conditions or a less expensive and more readily available product. But Dr. G. H. Stevenson, actively engaged in drug addiction research, believed that this was due rather to the social and cultural development of the province as a frontier area and to its having had in early years the influence of Chinese immigration which had brought in opium smoking. He indicated that 82% of those addicts he had studied in British Columbia had started their addiction in that province.

Court and prison statistics are the main sources of information on addiction, so that the unconvicted always constitute an undisclosed fraction of the total. This makes it most difficult to determine the true statistical situation and the rate of increase. We are, in fact, discussing the control of a phenomenon whose proportions are not known with accuracy.

### HAVE ADDICTS CRIMINAL RECORDS?

Commissioner Nicholson of the R.C.M.P. reported to the Senate Committee that of 2009 cases studied 1668 involved persons who were very probably criminals before they became addicts. In fact, only 341 had been first convicted under the Opium and Narcotic Drug Act.

Dr. Stevenson reported that three-quarters of those he had studied had been delinquent or had a criminal conviction before they went on drugs. He said the addicts had in the main been poorly adjusted before taking drugs and that the general causes of delinquency must be thought of as predisposing to addiction those personalities requiring this form of "crutch" to assist them through life.

This picture of the addict as both criminal and addicted tends to confuse the issue. Both criminality and addiction are symptomatic and should be dealt with as behavioural entities. There is increasing experience that criminality can be corrected even though it may have sociopathic or psychopathic involvement. Hence the addict's criminality and relationship to the illicit traffic should not deter his treatment for addiction even though this may be complicated medically by powerful social and legal factors.

### WHAT DOES ADDICTION COST?

A capsule of heroin, which is the most common narcotic drug illegally used, costs upwards of \$6.00

on the "street", and a "hooked" or "wired" addict may need upwards of ten "caps" a day to maintain the drug balance he desires.

To obtain this amount and enough for food and shelter, he must clear over \$60.00 per day. Female addicts obtain this mostly by prostitution and males either by living off the avails of prostitution or by theft. To clear this amount by theft he must actually steal a great deal more since he will not usually obtain more than 15% from a "fence" or perhaps 30% by direct sale on the "corner".

At any given time, of the known criminal addict group numbering about 2400, some 400 will be in the penitentiaries and a similar number in provincial penal institutions. Hence the number of illegal purchasers of drugs currently out of prison in Canada may be about 1600. Assuming that 600 are females and males living off the avails of prostitution, there remains an active predatory group of about 1000 either peddling drugs or stealing upwards of \$600.00 each per day, if they can, to maintain themselves. The loss to business and the householder, though seldom realized, due to the criminal depredations of this group is of staggering economic significance.

### IS THE ADDICT SICK?

Regardless of the criminal associations which may have led to the initial taking of the drug, of the prior delinquency which might have led to these associations, or of the subsequent criminality to maintain the habit, the addict is, in a very real sense, a sick person and in need of the help of the medical profession in co-operation with various adjunctive professions, such as social work and psychology. The addict is in the grip of a disease which has a pathological effect on him beyond his power of control.

This is evidenced first by the compulsive need he has for drugs. All normal considerations of truthfulness, honour and integrity are as nothing before this need, which is not less powerful than hunger. The addict, when on drugs, becomes a scheming, conniving person driven by an overwhelming need to secure satisfaction for this craving which, though it may be psychological in its origin, appears to involve changes in the body chemistry. The second characteristic is the inevitable increase in tolerance and hence in intake of the drug. This may build up very quickly and result in the diminution of the effectiveness of the drug owing to repeated use which develops the need for increasingly large dosage. A person may become addicted with a very few shots in the course of a few days.

It must be remembered that having become addicted and regardless of his past criminal record, if any, criminal acts of the addict result from the craving for drugs and his obsession with obtaining and maintaining a source of supply, rather than from any organic mental deterioration.

### WHY NOT GIVE HIM THE DRUGS HE WANTS?

Unlimited, free, unrestricted use of drugs of a prolonged nature would lead to a compelling addiction and would provide no realistic solution but an intensification of the effects on the addict. Apart from the constant danger of overdose, there is the



risk of infection from unsterile methods of intake, and most addicts are heavily scarred. The more indirect effects are due to neglect of self-care and hygiene.

In his personality he would become intensely preoccupied with self and indifferent to normal living, to proper standards of behaviour, to the discipline of work or to the need for realizable goals and achievements. He would avoid situations involving mature sexuality, social responsibility and competitiveness. At the best of times, his world is made up of himself and his problems; he has largely lost the capacity to give, even to his loved ones. His illness has destroyed for him the possibility of achieving the customary rights of freedom, happiness, friendship, work, security and health. He is engaged in a course of self-destruction and is to be pitied rather than feared. The unlimited and prolonged use of drugs would intensify this profile of psychic and social misery.

#### ADDICTION TAKEN FROM MEDICAL CONTROL

In Canada, the Opium and Narcotic Drug Act provides a mandatory minimum sentence of six months in prison for possession and a maximum sentence of 14 years for trafficking. It is not a crime to be an addict, but to have possession of drugs. Even if the drugs are obviously not being made available for sale, as long as they are in a quantity susceptible to analysis, the magistrate has no authority to award probation or to suspend sentence even if treatment were available and requested by the addict.

The present punitive approach has been no effective deterrent to the addict motivated by the need for drugs, or to the non-addict dealer in pursuit of substantial profits. The illicit traffic has not been suppressed, nor has the spread of addiction been prevented. This is not to suggest that the law enforcement efforts to control should not be continued to contain this social peril within the smallest scope. The higher-up supplier is rarely, if ever, caught, and the street pusher is usually the one on whom the force of the law descends. In a majority of cases pushers are themselves addicts forced to sell to assure their own source of supply or by other underworld pressures persuasively effective.

#### JURISDICTIONAL RESPONSIBILITY

The enforcement of the Opium and Narcotic Drug Act is the responsibility of the Federal Government. The R.C.M.P. seek to control the illegal importation and the sale of narcotics. The Department of National Health and Welfare, through the Division of Narcotic Control, is responsible for the legal importation and distribution of drugs.

In Canada, the treatment of illness is a provincial responsibility and, since drug addiction is considered to be a form of illness, its treatment would be under provincial jurisdiction. A number of provinces have provided for treatment, usually in mental hospitals, but such legislation has been in the main ineffective because it has failed to meet the basic difficulties inherent in treatment and in

the attitude of the addict himself. Treatment facilities have been provided within the penal systems at Mimico Reformatory in Ontario and at Oakalla Prison in British Columbia. The Narcotic Addiction Foundation in Vancouver has been established and is obtaining important data for study and planning.

#### TREATMENT

Legal sanctions and the full weight of the law are massed against the addict, who is forced to live a fugitive, hounded, transient life, truly without a place to lay his head, and in constant fear of arrest. He is in a sense an outcast and his inept attempts to solve his problems keep him in the world of his fellow addicts who alone, he thinks, can appreciate his problems. He insulates himself and does not seek or avail himself of available help owing to his need for anonymity and his association with the illicit drug traffic.

Unless he is in a state of severe distress due to lack of drugs, his appearance is not likely to be unusual. He has no defined mannerisms, tics, postures or speech impairment. His behaviour will probably be serious and co-operative; but his emotions may appear blunted and not appropriate to the intensity of the difficulty he describes.

The professional worker must remember that the addict is no amateur and consumes much time and effort in disguising the truth behind the façade he is building to obtain his ends, which are usually either drugs or assisted withdrawal. He may, in fact, really want withdrawal and cure, he may feign illness to secure drugs, he may use severe withdrawal symptoms as an appeal for medication, he may merely be "casing the joint" (particularly the physician's office) with a view to later theft of narcotics, prescription blanks or other valuables.

It is within such a frame of reference that treatment considerations must be undertaken. Such proposals should start with the humane withdrawal from drugs, a period of medical convalescence and pre-discharge preparation, and a period of post-discharge control including a long period of supervision in the community. The addict should have the right to return to the institution following the almost inevitable relapse.

Withdrawal symptoms are noted within about 12 hours after the last administration of drugs. These are acute for a few days and cease in a week or ten days in most cases, but a period of about two months is necessary to ensure recovery from the physical effects of drugs. Medically assisted withdrawal is individualized to the need of the patient, but usually involves substitute drug therapy or gradual reduction of dosage. It is essential to prevent the patient's access to drugs other than those prescribed, and this involves some custodial measures.

At present, withdrawal is usually done "cold turkey" in the city or county jails with little supporting medical treatment. This is a most agonizing process for the addict, characterized by severe twitching, shaking, sweating, vomiting, abdominal cramps and, in some cases, severe hallucinations.

The period of pre-discharge preparation may be from a few months to a year, depending on the patient's reaction to treatment and his capacity

to plan for discharge. He should at least be kept in hospital until he can sleep without medication and has received necessary dental and medical care to regain weight and appetite. During this period the clinical team may engage in psychotherapy, supportive treatment by developing educational and vocational skills, and practical planning for the re-establishment of the patient in the community.

The period of post-discharge control should continue the supportive treatment and help the patient test his plan, which should be readjusted as necessary to the experiences of competitive living, the securing of accommodation, of employment, of friends and group associations. On casual observation the addict may at this time seem self-possessed and even boastful; but his self-esteem is often low, as revealed in his running away from occasional failures or what he interprets as rejection. This low self-esteem may prevent him from functioning long enough to obtain some successful experiences which might help disprove his inner feelings. During this period constant supervision and support are desirable to bolster this sagging self-esteem and develop broader tolerance for tension, pressure and frustration.

Such treatment and re-establishment should preferably take place in his local community rather than in some central and isolated "addicts' island". He needs easy access to withdrawal in the event of relapse and the support of the climate of the institution and its personnel, which should be small enough to personalize its treatment. Hence the major municipalities (Montreal, Toronto, Vancouver) might well develop treatment centres and discuss the co-operative financing of these with more senior levels of government. The incidence of addiction may largely be in these municipalities, but the problem is much broader in scope and responsibility.

#### SPECIAL FACILITIES FOR TREATMENT

It is important to provide facilities for the treatment of the addict outside the penal institutions. These should be under medical control where the type of treatment described above (in very general terms) might be provided. Rather than leave the matter to private physicians or to general or mental hospitals, it would seem desirable at the present stage of the illicit drug traffic to set up resident rehabilitation centres which would focus the most informed and specialized medical and professional interest and knowledge on this problem. The necessary supportive restraints could be ensured in such a setting, as they are in mental hospitals.

The objectives of such rehabilitation centres might well be to reduce the addicts' suffering, to engage in treatment linked to research which would bring more complete understanding of addiction and enable us to speak of "cure" rather than "arrest", to prevent the spread of addiction, to offset the illicit drug traffic, to reduce the amount of criminal activity engaged in by the addict, and to restore addicts and their families to a state of social and economic health and well-being.

It is not suggested that such rehabilitation centres should be dispensaries to which people might apply

for a regular dosage of drugs, but rather that they be centres in which the purpose would be to bring about "cure" and not merely to maintain a habit of addiction. It is probably unwise to use the word "cure", since it is more likely that, at the present stage of understanding, the course of addiction can only be "arrested". Even to accomplish this requires a milieu therapy involving the whole person and his relationships in the community to which he will return. Preparation for discharge should involve visits into the community with social workers to enable the patient under guidance and with protection to pick up the threads of his affairs and to develop effective plans and relationships.

Dr. Harris Isbell of the United States Public Health Hospital for Addicts at Lexington, Kentucky, made follow-up studies of addicts treated at that hospital and believes that the recovery rate will be between 15 and 25% over a five-year period following treatment. He believes that this is an important result and that the problem of relapse should not be allowed to discourage the development of treatment programs and facilities.

An experiment at Hollywood Hospital in Vancouver with the use of LSD (lysergic acid diethylamide), which creates artificial psychoses, has resulted in a group of addicts remaining "off drugs" for over 12 months. This is a valuable clinical development which might be incorporated into rehabilitation centres as part of a complete treatment program.

The objection to rehabilitation centres may be made that addicts would seek to enter them only to obtain assisted withdrawal in order to reduce their tolerance and enable them to start the habit again on a minimal and less costly level. The extent of such improper motivation is a matter for conjecture, and under medical supervision, with the safeguards proposed, should be kept minimal.

With some exceptions experience has indicated that the addict would like to "kick the habit" and stay off, but, though there is some evidence that ageing and maturing may help, few are convinced that they could really do it and that it would be worth trying. Though the addict may have been properly motivated to enter a rehabilitation centre, the phenomenon of relapse must be anticipated. This is one of the realities that make treatment of the addict so difficult.

The real aim of the program should be to help the patient master his desire for drugs. While this means depriving him of drugs at the start by coercion to get him through the agonies of his need, he must be able to summon the strength eventually to deprive himself. When his gratifications have increased to the extent that they constitute a positive force, the addict will be reluctant to exchange the pleasures of his new reality for the certain destruction of his old way of life.

If the relapse is genuine, the patient should have the right to re-enter the centre and again receive assisted withdrawal, which should take only a few weeks before return to productive employment. If advantage were being taken of these facilities, the patient concerned should be treated as a law-breaker.



### THE LAW-BREAKING PATIENT

Where the patient misuses or abuses the treatment opportunities, refuses treatment, or is convicted of a criminal offence concurrent with active addiction, there is no other course but to treat him as a law-breaker and, if necessary, to sentence him to probation with a condition that he accept treatment. If he refuses this opportunity or is otherwise criminally charged, he should be sentenced to a medical correction centre, with a drug addiction unit, and thus perforce must be treated as a prisoner within the penal system.

In our custodial institutions there are at present few facilities for the treatment of addicts. Federal medical correction centres, including drug addiction units, should be established as part of the new development which proposes that the federal institutions will receive all men sentenced to over six months. Addicts from these institutions, when considered ready, should be returned to the community under parole supervision by way of the rehabilitation centres. They would thus profit by the post-discharge control for addiction under experienced workers co-operating with the prison after-care workers in regard to their criminality and total re-establishment.

Addicts are being paroled from penal institutions at the present time under the supervision of after-care agencies like the Elizabeth Fry Societies and the John Howard Societies. A reasonable proportion have refrained from further criminal activity and have abstained from drugs. A chemical test has been developed which indicates the presence of drugs in the body, and a condition of parole may be that the parolee consent to the performance of such tests. If these are positive the parolee has obviously violated the conditions of his parole and must again accept medical treatment, if possible through the rehabilitation centre rather than being returned to prison, though his violation of parole conditions may lead to this action by the parole authority.

### VOLUNTARY OR COMPULSORY TREATMENT

Treatment in medical correction centres as part of the penal system obviously involves compulsion in absolute terms. Treatment in rehabilitation centres of addicts on probation would similarly involve external motivation. But even for the addict who enters voluntarily with inward motivation, a degree of supportive restraint and some custodial features to prevent illicit access to drugs would be necessary. The power of individual motivation can rarely cope with the fixation of drugs. Like many other sick people, including the mentally ill, addicts may not have the will-power to go through a course of treatment without a degree of supportive coercion.

It should be possible for an addict to commit himself by civil proceedings as under the Mental Health Act. But there should be a restriction on his right to sign himself out immediately after withdrawal, before the period of convalescent and rehabilitative treatment has taken place. He should be required also to accept the post-discharge control.

It should be possible for a magistrate in a criminal court to suspend sentence for possession if the addict agrees to treatment in a rehabilitation centre rather than being sent to prison with all the stigma of a jail sentence and the added problems of re-establishment.

### THE CANADIAN DILEMMA

To treat addicts as patients and to place them under medical attention rather than in prison is the desirable goal. But we must accomplish this in the presence of a very active illicit market, including that in the United States, to which the patient may revert for supplementation of dosage or for complete dosage in the event of a relapse. Hence for a time the element of restraint to support voluntary motivation may prove essential in the medical management of the case. So might a system of photographic registration to prevent mobility between centres and an influx from other countries despite the penalty of immediate deportation.

It is relatively easy to effect withdrawal and by proper safeguards to ensure drug-free convalescence, but the difficult task faces all concerned when the addict returns to the community where there is an available supply. For this reason he must be willing to accept protective supervision with reasonable control of his activities and, if necessary, submission to tests for the presence of narcotics.

The process of law enforcement should be continued vigorously to bring about the identification of addicts and addict-traffickers. These should be referred for treatment either through civil or, if necessary, criminal proceedings. The non-addict trafficker and the suppliers at various levels should be rigorously pursued and sentenced under the Criminal Code, which appears to provide adequate sanctions with a maximum sentence of 14 years at the discretion of the magistrate.

### GET THE ADDICT OUT OF HIDING

Addicts are not a homogeneous group. All they have in common is their addiction. Each individual is his own therapy problem. Not all will voluntarily agree to undergo treatment. Not all who do so will be able to continue unless aided by some compulsion to support the regimen imposed.

Physical dependence on drugs can be removed by withdrawal treatment but the mental and emotional dependence can be overcome only through the individual's own efforts and desires. He must want to "kick the habit" and must realize that it may be a slow process in which there may be relapse. There should be no premature termination of support to the patient lest he return to drugs under stress situations.

But suppose he does! One ex-inmate of a penitentiary, with the help of an after-care society, remained off drugs and held a responsible job for over two years. He was a happy man, producing in the economy and maintaining himself and his family. He relapsed and was resented to prison to be maintained at a cost of \$2000 per year. A few weeks of treatment in a rehabilitation centre most probably would have enabled him under super-

vision to resume his life as if he had had an absence due to ordinary illness. Now once again he has had the devastating experience of failure, and he emerges again with the stigma of an "ex-con."

Much about the treatment and medical control of addiction is uncertain largely because of the presence of the illicit traffic which mocks the control efforts of law enforcement and the efforts of the professional worker in treatment and re-establishment. In the past we have conveniently let it be the patient that has been at fault and not our methods of control and treatment. It is now most important to agree on some basic plan which will involve a treatment approach.

In no other way will we get the addict out of hiding so that we can not only count him but obtain accurate information on relapse, "cure", and re-establishment. There will be kinks and "bugs" to be ironed out in any such plan, but given the opportunity and freedom to develop under medical control a positive answer to addiction in Canada can be found.

Can we escape the individual and social responsibility of helping others to reach their highest potential?

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## SHORT COMMUNICATION

PSYCHOANALYTIC IMPLICATIONS  
OF CERTAIN MEDICAL  
PROCEDURES

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WITH THE progress of medicine, various findings in different areas of medical investigation have directly led to changing concepts in the field of psychiatry. In a reciprocal way newer psychiatric insights have led to changing attitudes in other branches of medicine. It is the purpose of this paper to modify the understanding of certain medical procedures in their psychological effect on patients. Psychoanalysis makes us aware of important unconscious forces at work in both the physician and the patient in any doctor-patient relationship. It should be of great benefit to the doctor to be aware of his unconscious identification with his patients for at least two reasons: his awareness of this process within him allows him to guard against undue or exaggerated identification, which not only could hamper his medical

handling of a specific patient, but might in extreme circumstances threaten the doctor's own emotional wellbeing; and secondly, perhaps a more subtle danger is the reaction-formation that many physicians employ in fighting against their inherent identification with their patient. This often results in a catastrophe for the patient, because of the physician's unduly cold attitude.

Under the general heading of examination-procedure I should like to comment on the significance to a patient of disrobing. Despite the traditional attitudes of the medical profession to the draping of a patient, it is still common practice for many physicians to minimize the importance of this procedure. Some do not employ nursing personnel for the most intimate of procedures, such as examination of the breast. This is unwarranted when one is cognizant of the fact that to many patients a physical examination is an erotic experience. In some instances it represents a sexual molestation. The fact that the patient is a member of the same sex as the doctor does not rule out the necessity for discretion.

Psychiatric referral still seems very difficult for many doctors. There is no doubt that even today such referral is looked upon as a stigma. As a result, many practitioners postpone this type of referral. There is fear of indiscriminate use of short-cut methods, such as electroshock, tranquilizers and hypnosis. Properly used, these procedures are indispensable in alleviating severe mental distress, but in the hand of the "too busy" psychiatrist, they can become a convenient means of avoiding the basic conflict in the patient. Unfortunately, this evasion is comparable to treating acute appendicitis with morphia. On the other hand, lengthy and intense procedures such as psychoanalysis have been criticized for creating pathological dependencies. I can only state that psychoanalysis provides answers to mental conditions which otherwise would remain enigmatically unsolved, in much the same way as clinical microscopy and micropathology provide answers for safe scientific medical treatment. A passing statement should be made about "pseudo-analysis". The "pseudo-analyst" is someone who has never been analyzed or trained but who has sufficient psychiatric background to use the psychoanalytical language. The "pseudo-analyst" uses the couch with full confidence in situations where a psychoanalyst would not dare. Unfortunately, he is not equipped to handle the catastrophes that sometimes occur.

It is now an established psychiatric fact that the various orifices and apertures of the body play an exceedingly vital role in the development of the sexual and aggressive drives of the human. Because of the investment of these orifices with libidinous charge, certain procedures, which involve entrance or penetration with medical instruments, take on heightened significance beyond the actual medical event. Patients who have a phobia for dental or other oral procedures become more understandable

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when viewed in this light, as do the reactions of some patients to the passing of gastric tubes. Ill-timed and ill-prepared rectal examinations can create havoc with certain patients and may even precipitate paranoid psychotic reactions. Even to the most stable, a sigmoidoscopic examination is a shaking experience. Urinary catheter examination without awareness of the sexualized traumatic effects it can have on children is not uncommon. Similarly, vaginal examinations, which could sometimes be postponed for more careful preparation of the patient, can prove traumatic. A woman during analysis was able to bring out very clearly how the symptom of her mental illness centred on a period in her childhood when her physician-father exposed her to repeated catheter insertions followed by vaginal examinations. The uncommon medical practice of clitoric massage for purposes of dilatation during vaginal examination is to be deplored for obvious reasons. Finally, the very procedure of hospitalization of adults and children alike is always a major traumatic experience. It is to be hoped that it will not be long before the medical profession at large recognizes the importance of the mother when her child is being hospitalized. A modern hospital should be equipped to provide sleeping accommodation for mothers. It is unnatural enough for a child in good health to be separated from his mother for any length of time. In the same vein, labour-room facilities to allow a husband's support during his wife's labour should be the rule rather than the exception.

In my psychoanalytic investigations the repetitious appearance of mental symptoms directly related to specific operative procedures forces the conclusion that these procedures are endowed with the capacity for triggering unconscious psychopathological events. Decision for tonsillectomy is often made when the child is around the age of six or seven, sometimes a little earlier. Sometimes little attention is given to the fact that this is a most vital period in the child's psychological development. The result may be that, whereas the source of infection in the child may be eradicated, a neurosis may directly result from the procedure. It is to be encouraged that, wherever possible, such a procedure be postponed to a period when the ego is less vulnerable to the trauma. A similar policy should be adopted with respect to circumcision and herniorrhaphy in children. My psychoanalytic findings demonstrate a strong incidence of schizophrenic reactions after hernial repair in childhood. Amputative surgery warrants special mention. It should be borne in mind that the loss of a body-part invariably carries with it a concomitant symbolic loss. There is always a certain amount of phantom experience, as the body-part represents loss of part or all of a love object in the patient's unconscious. Patients who lose a limb require special understanding. Their emotional reactions can only be understood by the surgeon in the light of these findings. Plastic sur-

gery has its own unique problems. The patient's narcissism and quest for æsthetic improvements must surely be respected, but unconscious problems in identity must not be overlooked. Many patients surprise the plastic surgeon when, instead of being most grateful for the vast improvement in appearance, they suffer neurotic and sometimes psychotic reactions based on loss of a sense of identity.

The psychoanalytic implications of the procedures of sterilization and abortion are by far the most complicated and most perplexing. As a rule, one might say that all patients voluntarily seeking such operative procedures should have the benefit of psychiatric examination. A male, making such a request, almost invariably is suffering from mental illness of one kind or another. One such patient, who before coming for analytic treatment had submitted voluntarily to sterilization, revealed during psychoanalysis that in his unconscious he identified himself with a female and sought sterilization to curb his feminine instincts. A female patient at present under analysis had also submitted to an operation of sterilization before coming. She had six children in rapid succession and the surgeon was concerned about the physical beating resulting from these multiple pregnancies. Other ways of dealing with the neurotic predisposition involved should be contemplated before subjecting a patient to the catastrophic disruption of body-image that accompanies sterilization. Beyond the physical, the presence of the full reproductive system is vital for mental health. As to abortions, medical indications include certain emotional illnesses; these indications are very difficult to arrive at when the unconscious motivations of the patient are not accessible. For this reason, it is mandatory that every effort be made to uncover those forces before a decision is reached. As often as not, the unconscious wish of the patient is in direct opposition to the conscious request for abortion.

In conclusion, psychoanalytic investigation, by exploring unconscious forces, must improve the preparation and quality of certain medical procedures, as well as the attitudes of the physician to these procedures.

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#### TOBACCO IN RELATION TO HEALTH AND DISEASE

To all constitutions, tobacco is harmful when used in excess; and to many constitutions, it is injurious in any quantity, however small (*Lancet* 1: 770, 1872). This statement well illustrates the two most important aspects of tobacco-use as it relates to health and disease: the degree of tobacco-use (defined ultimately as "effective dosage"), which is a quantitative matter; and the particular susceptibility of the individual user, which is a qualitative one. While we must make better attempts in the future to measure and record and report the effective dosage of tobacco-smoke received by the user, we must remember that such measurements, however accurate, are insufficient in themselves to define the role of tobacco in disease.—*M. Times*, 88: 427, 1960.

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#### CANADIAN CONFERENCE ON EDUCATION

There are many reasons why The Canadian Medical Association should be a sponsoring and sustaining member of the Canadian Conference on Education, not the least of which is that our distinguished colleague, Dr. Wilder Penfield, is Honorary Chairman. The C.M.A. has been listed for three years among those many other national organizations which support the Conference but it is only recently that we have taken any active part.

It was therefore with a good deal of interest that a C.M.A. representative attended the Annual Meeting of the Canadian Conference on Education in Toronto on May 18, 1960. The slogan "Education is Everybody's Business" was well exemplified in the attendance. Professional educators, Deputy Ministers of Education, and representatives of Provincial Councils on Education rubbed shoulders and crossed verbal swords with delegates from such diverse groups as the Canadian Broadcasting Corporation, the Canadian Labour Congress, the Humanities Research Council of Canada, the Catholic Women's League, the Canadian Jewish Congress and the Canadian Association for Adult Education, to name only a few. Despite their diversity of background, all present appeared to be united in their sincere interest in education. They are critical of the shortcomings of our present systems, anxious about our ability to meet the growing demands on schools and universities, and alert to institute improvements. In the words of the able Chairman, Mr. Kurt R. Swinton, "educators vacillate between panic and complacency, and the function of the Conference is to comfort the afflicted and to afflict the comforted".

To one primarily interested in medical education, it is salutary to be exposed to the basic considerations of primary and secondary education: more classrooms, more teachers, more money, more time, more interest on the part of parents, more study on the part of students, and more and better methods of instruction. The output of our system

of primary and secondary education is the raw material which must be moulded into the doctors of tomorrow, and it is axiomatic that the better the material the better the product.

Plans are rapidly maturing for the Second Canadian Conference on Education, which will be held in Toronto in February 1962.

Eight major areas of concern in Canadian education have been identified and study groups have been established to explore them. The topics include: The Aims of Education in a Free Society, The Professional Status of Teachers, Development of Student Potential, Financing Education, Continuing Education, Research in Education, and Lay Leadership in Education.

It seems probable that these subjects may provide the framework of the Second Canadian Conference, and it will be noted that professional education is not mentioned except possibly under the heading "Continuing Education". A reactivation of interest by the C.M.A. and other professional associations may yet serve to bring to the attention of Canadians interested in education the problems of education for the professions and the contributions of the professions to the totality of education in this country.

#### Editorial Comments

##### TAIT MCKENZIE'S INFLUENCE

It is with great pleasure that we publish in this issue the thoughtful and sensitive tribute paid by Major J. F. Leys to the memory of Robert Tait McKenzie in the paper on "A Physical Fitness Shrine in Canada". A tribute is never more significant than when it bears in its tone and scope, as does this, the reflected evidence of the spirit of the man to whom it is offered. Major Leys has the inestimable advantage of being steeped in the atmosphere which Tait McKenzie sought and created, of rural beauty and the charm of his own art. Others perhaps might have equally felt the attraction of these qualities and have also recognized the historical interest of the home of a great man, but that it should have come into the hands of one governed by the strong compunction which Major Leys feels towards the aims and ideals of Tait McKenzie, is one of the combinations of chance as rare as it is happy. The Mill of Kintail is now the private home of Major Leys, but he wants it to continue to say to Canadians the things which the man who so finely adorned and enriched it was always saying to them and to the people of many other countries. It can indeed enshrine Tait McKenzie's ideals, but he would have wished, even as Major Leys suggests, to focus and stimulate continual effort in the struggle to preserve the health and beauty of the body.



### RENAL TUBULAR NECROSIS

Acute renal failure due to tubular necrosis is receiving much less attention now than during World War II and the few years following it. It was then known as lower nephron nephrosis and had a very grave prognosis in military as well as civilian war casualties. Reaction to sulfa drugs was another dreaded cause of this necrosis, and it is well worth recalling in all humility how the severely ill patients were subjected in those days to ureteral catheterization. It is amazing how many of them apparently improved under this treatment which we now consider unnecessary and most likely harmful. Improved methods of treatment led to a brighter outlook but the prognosis changed again to pessimism following the Korean war when very high mortality accompanied acute tubular necrosis in wounded soldiers. In one group the mortality was 53%, and even in civilian cases collected from nine centres, 791 cases had a total mortality of 43%.

Among children, more than half of these cases are due to nephrotoxic agents and in the younger age group (one to four years) poisoning is the major cause of acute tubular necrosis. Their prognosis can be judged by the fact that in one series of 37 children 12 died during the acute phase. A marked advance in the treatment of acute renal failure has been the realization that water restriction is important in order to prevent water intoxication. During the acute phase adults are rarely given more than 400 to 500 c.c. of water per day.

Recently two reports of series of acute tubular necrosis have appeared and both emphasize the striking difference between the prognosis in medical and obstetrical cases, on the one hand, and those due to trauma, on the other. Loughridge and his colleagues<sup>1</sup> analyzed 28 patients with acute tubular necrosis who recovered. They also describe the clinical course of 11 fatal cases of acute renal failure, three of which proved to be renal cortical necrosis due to concealed hæmorrhage during pregnancy. In their series of 220 cases of acute renal failure of all types referred to hospital for dialysis by artificial kidney, the prognosis was good in medical or obstetrical patients but much worse when secondary to severe injury or to surgical operation. The latter group had a high mortality rate despite careful conservative treatment and, in many cases, repeated dialysis. On the other hand, in the 28 patients whose renal failure was due to medical or obstetrical conditions, recovery was complete with or without dialysis. Indication for hæmodialysis was any one of the following: (1) blood urea above 440 mg. per 100 ml.; (2) plasma-bicarbonate below 12 mEq./l.; (3) plasma-potassium above 7.5 mEq./l. despite therapy with cation-exchange resins by mouth; (4) electrocardiographic evidence of intraventricular block with widening of the QRS complexes due to hyperpotassæmia; uræmic stupor, coma, vomiting, hiccup, or fits. Four hundred to 500 ml. of 20% lactose plus the total volume of the measurable fluid loss of the previous day was given by mouth. Antibiotics or sulphonamides were given for obvious infection, and packed cells were infused in amounts large enough to maintain hæmoglobin concentra-

tion above 10.2 g./l. In female patients non-virilizing androgens were administered as well. Of the 11 fatal cases, four patients died in the oliguric stage, two in the early diuretic stage, and two in the later diuretic stage. Of the three fatal cases of renal cortical necrosis, two patients died in the oliguric stage and the third patient in the early diuretic stage. Infection was the main cause of death, usually from organisms resistant to the available antibiotics.

Kiley, Power and Beebe of Albany, New York,<sup>2</sup> report 80 cases of acute tubular necrosis and divide these into nephrotoxic, hæmolytic, post-partum, postoperative, post-traumatic, and post-aneurysmectomy cases. Of this series 48 required hæmodialysis. In the 23 whose acute renal failure was not associated with trauma, the mortality was 9%, but in the 57 postoperative or post-traumatic cases the mortality was 65%.

It is remarkable that in both reports the duration of oliguria did not influence the prognosis significantly. Age was of importance, the prognosis improving considerably in patients under the age of 35. The best prognosis was in the post-partum and in the hæmolysis groups where no fatalities were observed and where dialysis was carried out in half of the cases. The highest number of severe cases was in the postoperative group where dialysis was frequently carried out, as well as in the post-traumatic and the aneurysmectomy groups. The nephrotoxic group had only few fatalities but contained a larger number of dialyzed than non-dialyzed cases. It has to be borne in mind that dialysis itself is responsible for complications. Four dialyzed patients died, one from extension of brain hæmorrhage, one from pulmonary embolism, and two from undetermined cause. There were also such undesirable reactions as rising blood pressure, variations in cardiac rate and rhythm, fever and bleedings. It is only fair to point out that dialysis is often carried out on moribund patients, and in some series death frequently occurred before the procedure was even begun. Kiley *et al.* did not observe any favourable effects on protein catabolism from the administration of testosterone and abandoned its use. They admit, however, that newer anabolic agents may be more effective.

After reviewing the recent literature on acute tubular necrosis and discussing Dr. Loughridge's report, the editorial in the same issue of *Lancet* comments on the grave prognosis of surgical and post-traumatic tubular necrosis. It suggests that these injuries may possibly prolong uræmia, perhaps by increasing the rate of breakdown of endogenous protein or by continuing renal damage. From the paper by Kiley *et al.*, it appears that infection may have an important bearing on the situation. The excessive breakdown of proteins is obviously a very serious matter, as it further complicates postoperative conditions as well as prolonging healing of post-traumatic damage. Delayed wound healing, dehiscence of incisions and post-operative fistulæ are frequent, and the mortality rate in such cases is high.

W. GROBIN

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**Medical News in brief****DEVELOPMENT OF URINARY  
CONTROL IN CHILDREN**

An infant starts life with an automatic bladder. By the time a child is four and a half years old, he has acquired complete urinary control both by day and by night. After a study of the physiology of micturition by means of the fluoroscope in over 1000 children, Muellner (*J. A. M. A.*, 172: 1256, 1960) concludes that development of urinary control is a self-learned skill in the use of large skeletal muscle groups (levator ani, thoracic diaphragm, and abdominal musculature) with which the child manipulates his intra-abdominal pressure.

Just as the child's initial efforts at walking are uncertain and awkward, so are his early attempts to manipulate his intra-abdominal pressure. Through trial and error he learns that ballooning his abdomen is not the way to start his stream, and only gradually does he acquire the skill to direct his intra-abdominal pressure toward the bladder neck. It is not possible for any parent to teach the child the complex use of the various muscle groups or to co-ordinate them in such a fashion as to develop mastery over the voluntary mechanism. Having achieved voluntary control over his bladder, the child now can control his bladder capacity as well; he has the means at hand to enlarge this capacity to the point where the bladder will be able to hold the total output of night urine. Primary enuresis is due to the improper development of bladder capacity of a child through the inadequate use of his voluntary mechanism.

All children start life with a small bladder which they must enlarge as they grow older. For some the transition is easy, for others quite difficult, and for still others impossible, without intelligent medical help. All children are thus potential enuretics.

The treatment of enuresis, therefore, can be placed on a rational basis. Past efforts, which were primarily designed to "benefit the bed and not the child", are futile and should be abandoned. The child should be instructed to force fluids during the day and to hold his urine as long as possible. The use of anticholinergic drugs during the day and at bedtime often helps to accomplish more rapid bladder distension.

**POSSIBILITIES AND LIMITATIONS  
OF DIABETIC TREATMENT WITH  
BIGUANIDE DRUGS**

The lowering effect on blood sugar of the guanidines has been known since 1918, and in 1926 Synthalin A was introduced in the treatment of diabetes. Somewhat later this substance and Synthalin B were shown to have liver toxicity and they were withdrawn. Phenformin or DBI, DBB, DBTU and W37 belong to the biguanide group. Their lowering effect on blood sugar is considered to be due to blocking of the Krebs cycle in the cell, which results in anoxia, and possibly also depression of oxidative phosphorylation. On the other hand, there is supposed to be elevated peripheral utilization of glucose. These findings are disputed by some and there is at present no uniform opinion about the action of the biguanides. At the Joslin Clinic in Boston, 411 patients were treated by biguanides up

to the time of this report and 73 were treated at the Diabetic Clinic of the Medical Out-patient Department of the University of Munich (Germany). The first patients were given DBI in December 1956. It was found in both centres that DBI can be well tolerated if divided into several doses to a total of 150 mg. per day and somewhat less frequently up to 200 mg. per day. With higher dosages, gastro-intestinal disturbances are rather common, although some patients tolerated 250-350 mg. and one even 400 mg. per day.

Of 53 patients who could not be controlled by tolbutamide or other sulfone derivatives, 34 became well controlled with DBI, and another 14 had good reduction of blood sugar but had gastro-intestinal disturbances. In only five was there no effect on the blood sugar. In 45 diabetics who were only insufficiently or poorly controlled by tolbutamide, combination with DBI produced satisfactory control. Late failure (secondary failure) with biguanides has so far not been observed in these two centres. Hypoglycaemia has also never been a serious problem, even when DBI was combined with insulin. In summary it can be said that DBI and other biguanides act by reducing blood sugar independently of a functioning pancreas. Their effectiveness is limited when doses larger than 150-200 mg. per day have to be given, because of the frequency of gastro-intestinal upsets. These side effects are usually abolished by discontinuing the drug. The stabilizing effect of biguanides is of particular usefulness in some cases of brittle diabetes. The drug can be combined with insulin as well as with the sulfonyl drugs and improve control in some difficult cases.

There is no need for biguanide therapy or, for that matter, any other oral anti-diabetic or insulin therapy in patients who can be controlled by diet alone.—H. Mehnert and L. P. Krall: *Deutsche med. Wchnschr.*, 85: 577, 1960.

**PREVENTION OF RECURRENT  
RHEUMATIC FEVER BY ORAL AND  
REPOSITORY PENICILLIN**

During a three-year period, 139 patients with either rheumatic heart disease or an acceptable history of previous rheumatic fever were given streptococcal prophylaxis with either benzathine penicillin G, 200,000 u. daily by mouth, or 900,000 u. intramuscularly at approximately monthly intervals. Both regimens were found by Mou and co-workers (*Am. J. M. Sc.*, 239: 403, 1960) to be effective in preventing clinical Group A streptococcal infections and recurrent acute rheumatic fever. Modest increases in antistreptolysin-O titre were noted with equal frequency in the two treatment groups and were unrelated to clinical illness. They were noted particularly in the spring months.

There was a constant downward progression of the median antistreptolysin-O value for the entire population during the observation period, except that some minor increases were observed during the fall-winter season. Few allergic reactions were noted and these were of little consequence except for one episode of anaphylaxis after a first injection. Post-injection pain and discomfort were common, but not a deterrent to repeated injections.

(Continued on advertising page 15)



## NEW DRUGS

This listing of new products is based on information received from Dean F. N. Hughes, Faculty of Pharmacy, University of Toronto, and the *Canadian Pharmaceutical Journal*, to whom we owe thanks.

### MISCELLANEOUS

#### Phenylephrine and diphenylpyraline HCl: NOVAHISTEX Elixir, Pitman-Moore

**Description.**—Each 5 c.c. contains: phenylephrine hydrochloride 20.0 mg.; diphenylpyraline hydrochloride 2.0 mg.; chloroform (approx.) 8.0 mg.; l-menthol 0.6 mg.; contains sucrose 27%.

**Indications.**—To relieve respiratory congestion associated with common colds and allergic reactions.

**Administration.**—Adults, one teaspoonful every 4 hours.

**How supplied.**—Bottles of 4 and 16 fl. oz.

#### Oxyphenisatin and edathamil disodium: LAVEMA, Winthrop

**Description.**—Each packet contains 0.02 g. oxyphenisatin stabilized with edathamil disodium in lactose q.s. ad 3 g.

**Indications.**—May be used as a cleansing enema apart from x-ray studies and prior to urinary, gastro-intestinal and cholecystography x-ray examination. Also preoperative preparation of the large intestine and colon. May be mixed with barium for x-ray examination of the large intestine.

**Administration.**—Cleansing enema: Lavema in a dosage of from 1.5 to 3 g. should be thoroughly mixed in 1 to 2 quarts of water. Radiopaque (barium) enema adjuvant: Lavema in a dosage of from 1.5 to 3 g. should be added to the usual 1 to 2 quarts of barium enema suspension and well mixed, preferably in an electric mixer, to obtain uniform dispersion ( $\frac{1}{2}$  packet for elderly and debilitated patients).

**How supplied.**—Packets containing 0.02 g. Lavema in a lactose diluent (q.s. ad 3 g.). Boxes of 100.

#### Metronidazole (trichomonacide): FLAGYL, Poulenc

**Description.**—1-(2'-hydroxy-ethyl)-2-methyl-5-nitro imidazole. Oral tablets of 250 mg., vaginal inserts of 500 mg.

**Indications.**—Vaginitis, urethritis, due to *Trichomonas*.

**Administration.**—**Women**—Systemic and local treatment: orally 250 mg. morning and night for 10 days; locally, one insert deeply into the vagina for 10 to 20 days. **Men**—Orally, 250 mg. morning and night for 10 days; sometimes necessary to increase dosage up to 1 g. daily, or to increase duration of treatment.

**How supplied.**—Tablets, tubes of 20, bottles of 100, 500 and 1000. Inserts, boxes of 10, with applicator.

#### pHisoAc Cream, Winthrop

**Description.**—Contains: colloidal sulphur 6%, resorcinol 1.5%, hexachlorophene 0.3%, orthophenylphenol 0.3%, and alcohol 10% (w/w) in a stable cream base (flesh-tinted).

**Indications.**—For treatment of acne, for skin-peeling action, to suppress and mask lesions.

**Administration.**—After washing with pHisoHex, the patient should "dot" the cream on his skin at bed-time, then smooth and blend it. Patients with oily skin should also use the cream during the day.

**How supplied.**—Tubes of  $1\frac{1}{2}$  oz.

#### Bath oil: ALPHA-KERI, Westwood

**Description.**—Antipruritic oil for the bath.

**Indications.**—Treatment of: pruritus senilis-pruritus hiemalis; zerosis or asteatosis; ichthyosis; chronic atopic dermatitis; soap dermatitis; contact dermatitis; nummular dermatitis; psoriasis.

**Administration.**—Use as required as an aid in the treatment of dry, itchy skin.

**How supplied.**—Bottles of 8 fl. oz.

## REVIEW ARTICLE

### NOMENCLATURE FOR BLOOD CLOTTING FACTORS\*

L. B. JAKES, M.A., Ph.D., F.R.S.C.,†  
Saskatoon, Sask.

THIRTEEN YEARS ago, at the invitation of the Macy Foundation, 15 leading workers in the field met in New York City for the first of the Macy Conferences on Blood Coagulation and Allied Problems. One of the greatest causes of confusion we found was the problem of nomenclature. We never knew when an argument was about different phenomena or about the same phenomenon described in different terms. If workers in the field were then able to communicate only with the greatest difficulty, the general clinician and the student certainly found the literature a jungle, and this increased in the next few years. Two of the blood clotting factors were described by 13 different terms and a third by 12; one factor had been given four different names by a single investigator.

Since the group were active teachers, all recognized this as a very serious problem in which we shared a moral and scientific responsibility to unravel the confusion. The problem was crystallized at the First International Congress on Thrombosis and Embolism, held in Basle in 1954. This congress attracted the active workers in the field from all countries, including those behind the Iron Curtain, and the congress established the International Committee for the Standardization of the Nomenclature of Blood Clotting Factors, consisting of 22 workers in the field, from 14 different countries. This has since been increased to 18. Dr. Irving S. Wright was elected chairman in recognition of his marked talent in achieving agreement between workers in this field.

In the past five years, meetings have been held in Boston, Oxford, Copenhagen, Rome and Montreux, with continuing activity in numerous laboratories, and correspondence between meetings. Basic agreements were reached on the following points:

1. The situation was chaotic, and some system of universal names or symbols was essential to permit further progress in communication and teaching in this field.

2. The development of any such system would necessitate the yielding of some of the pride of authorship for the common good.

3. The new system should avoid names which imply an action by the factor. The reason for this had become clear when factors which had previously been given names implying function had later proved not to have that function, but quite a different one.

\*Presented at the Western Regional Group, Division of Medical Research, National Research Council of Canada, Banff, Alberta, January 25, 1960.  
†Professor and Head of the Department of Physiology and Pharmacology, University of Saskatchewan, Saskatoon, Sask.

4. Symbols or names used should convey the same meaning in any language.

As time passed, it became increasingly evident that only a numerical system fully met these qualifications, and since some of the factors had already received Roman numerals in addition to other names, this seemed a logical point from which to start discussion. In September 1958, in Rome, it was agreed that Roman numerals should be used as the international symbolic code, and that following the symbol the author could, if he so desired, include whatever synonym he wished. This should be in parentheses. Thus, one would write factor V (proaccelerin), or, if one wished, factor V (labile factor). The Roman numeral would be intelligible in any language, including the Oriental. Arabic numerals were reserved for platelet factors. These have not as yet been officially assigned, although some are in common usage.

The first four factors are so widely known by their names that the Roman numerals seem less necessary, but may be used. Thus: I—fibrinogen; II—prothrombin; III—thromboplastins; IV—calcium. It seems likely that, for these, the names will continue in common usage. It will be noted that "thromboplastins" is plural, because they may develop from many sources, and due recognition is given to this. If a subdivision is desired, small letters will be used to indicate the source, e.g. III(a) lung thromboplastin, III(b) brain thromboplastin, etc.

The principle having been established, it was then essential to develop criteria by which one could establish the actual existence of a factor, and to determine which factors were at present sufficiently well identified to justify being assigned a number. This task was assigned to a Criterion Committee, with Professor R. B. Hunter, of Dundee, as Chairman. The details of the studies cannot be elaborated here, but the broad points of agreement for the operation of this committee were as follows:

1. The minimal requirements for the characterization of a clotting factor in whole blood, plasma or serum shall be the effect of storage, adsorbability, inactivation by heating, and the effect of pH. Additional chemical data are desirable if available.

2. Any clinically identifiable state associated with an abnormality in the clotting mechanism shall be regarded as supporting the evidence for the lack or excess of a factor.

3. It is essential to list methods of assay and physiological properties, an appropriate selection of which methods will be considered as minimal for presentation of a factor before the Criterion Committee. In case of previously undescribed factors, the mechanism used for identification shall be clearly described by the author and accepted by the committee.

With the use of these criteria, a number of factors have been exhaustively studied and assigned

TABLE I.—NOMENCLATURE FOR BLOOD CLOTTING FACTORS

I. Fibrinogen
II. Prothrombin
III. Thromboplastins: (a) lung, (b) brain, (c) platelets, (d) other tissues
IV. Calcium
V. Ac-globulin
VII. Prothrombin conversion factor (accelerator) (Owren) Prothrombin accelerator factor (Macmillan) Co-thromboplastin (Mann, 1951) Pro-convertin, inactive and active (Owren) Cofactor V (Owren) Plasma thromboplastin precursor (Conley <i>et al.</i> ) Serum prothrombin conversion accelerator (precursor) (Alexander) (Pro-SPCA-SPCA) Stable prothrombin conversion factor (stable factor) (Owren, 1951) Stable factor (Stefanini) Factor VII (Koller) Autoprothrombin (?) (Seegers, 1955) Other possibilities: Prothrombokinase—thrombokinese (Milstone, 1948) kappa and delta factors (Sorbye, 1950).
VIII. Antihæmophilic globulin (AHG) (Patek and Taylor, 1937) Factor VIII (Koller, 1954) Thromboplastinogen (Quick, 1947) Platelet cofactor I (Seegers) Antihæmophilic factor A Plasma thromboplastic factor (Ratnoff) Plasma thromboplastin factor A (Aggeler) ? Other synonyms (Feissly, Shinowara, Lenggenhager)
IX. Plasma thromboplastin component (PTC) (Aggeler <i>et al.</i> ) Plasma thromboplastin factor B (Aggeler <i>et al.</i> ) Christmas factor (Biggs <i>et al.</i> ) Antihæmophilic factor B (Soulie and Larrieu) Factor IX (Koller) Platelet cofactor 2 (Seegers)
X. Stuart factor Prower factor

permanent symbols. These are listed in Table I, along with previously used terms. The following is a brief summary of the committee's description of each factor.

**Factor V.**—The details of the biochemistry, preparation and assay of this substance we owe to Dr. Seegers and to Dr. Owren, who discovered this factor simultaneously by the biochemical and clinical approaches respectively. This factor is necessary for the formation of the prothrombin-converting substance in the blood both with and without tissue thromboplastin. Deficiency of this factor results in a hæmorrhagic diathesis which is probably inherited, and has been described as a parahæmophilia. Dr. Owren conducted a model study of the first case under the most adverse conditions due to the Nazi occupation of Norway.

**Factor VII.**—Our knowledge of this is due to the combined efforts of many investigators. The level of this substance in the blood is species-specific. Deficiency results in a quantitative prolongation of the one-stage prothrombin time. It combines with tissue thromboplastin during coagulation to form the prothrombin converting substance. It is not essential for thromboplastin generation in the coagulating blood. It plays a part in the production of at least three groups of abnormal states—(1) a congenital deficiency of fairly frequent occurrence



with hæmorrhagic phenomena (purpura, hæmatoma, bleeding from mucous membranes); (2) acquired deficiency in liver disease, vitamin K deficiency, the immediate neonatal period, and following the administration of prothrombinopenic agents, such as bishydroxycoumarin, etc.; (3) excesses of factor VII found in certain states associated with a high incidence of thrombo-embolism, such as the third trimester of pregnancy.

**Factor VIII.**—Enters into the early stages of coagulation with factor IX and  $\text{Ca}^{++}$  to produce an intermediate product which reacts with platelet factor 3. The result of this reaction in the presence of factor V is a very active agent in prothrombin conversion. It is essential in the formation of blood thromboplastin. A deficiency (1) prolongs the clotting time, (2) diminishes the thromboplastin formed, and (3) diminishes prothrombin conversion. Deficiency results in hæmophilia A, which is well known as the hereditary hæmorrhagic disease that occurs almost exclusively in males but is female sex-linked. The degree of deficiency of factor VIII varies from patient to patient. Hæmorrhage occurs in any tissues after minor injuries, and is frequently very serious.

**Factor IX.**—Factor IX, like factor VIII, is essential for the formation of intrinsic blood thromboplastin. It probably enters into reactions leading to the formation of this thromboplastin, forming with  $\text{Ca}^{++}$  and factor VIII an intermediate product which then reacts with platelet factor 3 and factor V. It influences primarily the amount of thromboplastin formed and not the rate of its generation. Its deficiency produces hæmophilia B, or Christmas disease, named after the now famous patient of Biggs and MacFarlane. This is usually a severe hæmorrhagic disorder, resembling hæmophilia A, is inherited in the same way, and is probably the type of hæmophilia earliest studied. Studies of this disorder led to the identification of factor IX, by Pavlovsky, and Biggs and MacFarlane independently.

**Factor X.**—This is required for full coagulant activity of thromboplastins, and for normal clotting tests, including the prothrombin time, thromboplastin generation, partial thromboplastin time, recalcified clotting time and prothrombin utilization. Stuart and Prower were patients studied by Graham and Koller. Deficiency of the factor results in hæmorrhage, such as epistaxis, hæmarthrosis and hæmatoma. At times the bleeding can produce an anæmia severe enough to require transfusion. The deficiency is inherited as a highly penetrant but incompletely recessive autosomal characteristic. Mild deficiencies occur in heterozygous subjects. This factor is also diminished in the newborn, in hepatitis or cirrhosis, and by bishydroxycoumarin and similar prothrombopenic drugs. Stored serum gradually becomes deficient in this factor before the concentration of factor VII or IX decreases.

#### NEW FACTORS UNDER CONSIDERATION

A number of additional plasma and serum factors have been described by various workers who believe they have established that they play a role in blood clotting. These factors are now under study by the committee, and if the evidence indicates that the claims are valid they will be assigned Roman numerals. The Hageman factor is one of these and was given extensive consideration at the 1959 meeting. It was decided that it would be premature to list it, as the necessary tests are not complete. This factor was named after the first patient of Ratnoff. The clotting time of whole blood of such patients is usually abnormally long in either plain glass or siliconized tubes. The recalcified clotting time of the plasma, the serum prothrombin time, thromboplastin generation and partial thromboplastin times are also abnormal in patients with this defect. Prothrombin time is usually normal, but may be slightly prolonged. Bleeding time, fibrinogen and capillary fragility are not affected. The factor is thought to be necessary for blood coagulation in glass. Patients with a deficiency of this factor have no symptoms or bleeding tendency, so that at present the deficiency is known as the Hageman trait. A few patients with this trait have been discovered as a result of routine coagulation studies carried out before anticipated surgical procedures. While these patients appear abnormal according to coagulation studies, they do not develop unusual hæmorrhagic complications following surgery or accidental trauma. Ratnoff and Margulis believe that the deficiency is transmitted as an autosomal recessive trait.

Another factor under consideration is PTA or plasma thromboplastin antecedent. Several cases with deficiency of this have been described, with a mild hæmorrhagic bleeding tendency. The deficiency gives a long coagulation time, a prolonged prothrombin utilization, and incomplete thromboplastin generation. It has been suggested that "PTA deficiency" actually represents multiple mild deficiencies of other coagulation factors, for example, factors VIII and IX, while the PTA factor itself interacts with active Hageman factor. A case of pure deficiency of PTA appears to be that studied by M. E. Todd, Irving S. Wright and G. Panter. The blood of this subject has a long clotting time in glass but the patient has had no hæmorrhages, even though he has had several surgical procedures. He has normal thromboplastin generation. He was the first subject of a research project and was expected to be a normal control. On the first 106 subjects 14% were found to have "abnormalities" on the basis of coagulation tests.

Whether Hageman and PTA should even be listed as blood clotting factors is being debated. No hæmorrhagic disease is associated with these deficiencies *per se*. The factors have been demonstrated to act only *in vitro* (in glass). However, Wessler has found that the only serum ineffective

in producing experimental thrombosis in rabbits with venous stasis was that deficient in PTA or Hageman, so that these factors definitely have clinical significance in thrombosis. The paradox with respect to hæmorrhage can be reconciled when it is remembered, as I have demonstrated on previous occasions, that hæmorrhage is due to multiple deficiencies in hæmostasis, not to a single deficiency.

It has been the belief of those who study coagulation that much of what we are studying has a wider biological and medical interest. This is well exemplified by the fact that glass activation of Hageman factor produces three activities—acceleration of thromboplastin generation, contraction of isolated smooth muscle, and increase in capillary permeability. We therefore hope that our attempts at clarification will be helpful to others working in many fields which are not thought of as involving coagulation.

The committee gratefully acknowledges the support given to it by official bodies in various countries, including the Medical Division of the National Research Council of Canada.

## Men and Books

### A PHYSICAL FITNESS SHRINE IN CANADA

JAMES FARQUHARSON LEYS, *Almonte, Ont.*

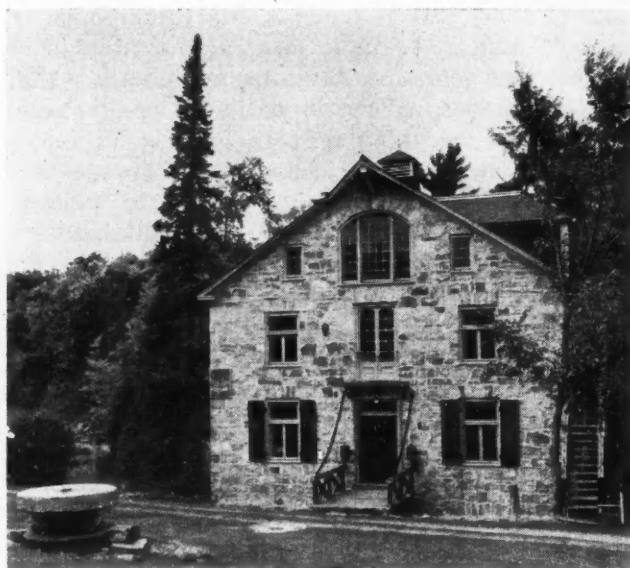
THE CHALLENGE put before the medical profession by H.R.H. The Duke of Edinburgh sets the problem of physical fitness in an age of industry, luxury and leisure. It is more than the negative question of delinquency and sub-health. It is the positive problem of establishing a *joie de vivre*, the fulfilment of every man's capability for joy through accomplishment, the substitution of life for listlessness, the education of the whole man. The medical profession shares responsibility in this with a host of related professions and interests.

This is a complex affair, but it is encouraging to know that once there was a man who managed to co-ordinate within himself most of the professions and interests requisite to deal with it. This man was Robert Tait McKenzie, the Canadian surgeon, physical educator and sculptor, who lived from 1867 to 1938.

Members of the Canadian Medical Association may be interested to know that in Canada there is a shrine dedicated to the memory of Tait McKenzie and to the ideals of physical fitness. It seems likely that it is the first shrine of its kind in the world. It consists of an old stone grist-mill (Fig. 1) on the Indian River near Almonte, Ontario, built in 1830. In 1930 it was restored by Tait McKenzie as his summer home and studio, and re-named by him the Mill of Kintail. In 1958 it was recognized as an historic site by the Government of Ontario; and there is now a growing sentiment that the Mill of Kintail should become a national shrine within a park protected by some authority, evoking

the memory of Tait McKenzie as an inspiration to all concerned with providing modern youth with the opportunity to develop their capacities in mind and body.

Tait McKenzie is the father of medical physical education in Canada. He was born in Almonte and, as a boy, worked in the harvest fields and roamed the woods and streams. He attended Almonte High School, Ottawa Collegiate, and McGill University (A.B. 1889, M.D. 1892). Himself an all-round athlete (boxing, football, high-jump, fencing, swimming and gymnastics), immediately on graduation he took entire charge of physical education at McGill and, in 1894, as a result of his report on the desirability of medical supervision of all students, he became Medical Director of Physical Education, the first post of its kind in Canada.



Ontario Dept. of Travel and Publicity

Fig. 1.—The Mill of Kintail. An old grist-mill near Almonte, Ont., built in 1830.

At the same time, Tait McKenzie was Lecturer in Anatomy to the University; formed a private practice in Montreal, specializing in the treatment of deformity by exercise; was private physician to Lord Aberdeen, then Governor-General; and, as part of his demonstration in anatomy, undertook sculpture, being already an accomplished artist in water-colour. He progressed from studies of the human body under stress of effort and fatigue, to beautiful figures in the round, which later established him as probably the greatest sculptor of athletes since the classic Greeks. He was also a keen member of the Black Watch, Royal Highlanders of Canada; and, on becoming fluent in French, mastered the folklore, songs and dances of French Canada.

Tait McKenzie is thus a superb example of all-round balance of mind and body. Aware of the joys of effort, he continued through life this triple existence as surgeon, physical educator and artist-sculptor. To a degree reached perhaps by no other man, he identified himself with every phase of health, physical education and recreation. As a former country boy, enriched by a medical training, he was poignantly aware of the tragedies inflicted on youth by the obliteration of playing spaces, and consequently dedicated himself above all else to physical education.

In 1904 he accepted the chair of Physical Education at the University of Pennsylvania, ranking concurrently



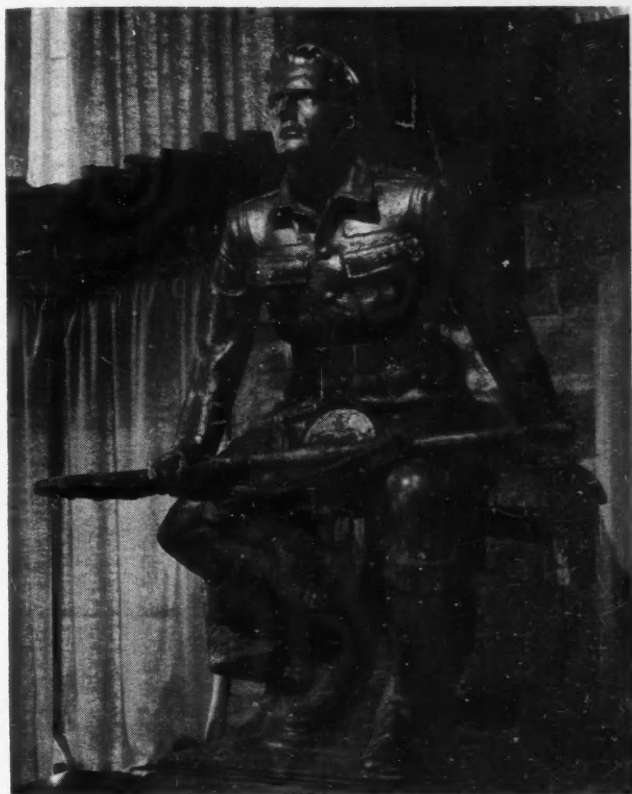
as full professor on its medical faculty. On his insistence, all students underwent medical examination, and took at least two periods of exercise a week under his department for all four years, with credits and penalties as in other academic subjects. His book "Exercise in Medicine and Education", published in 1910, is a classic. He reached far beyond the classroom in an attempt to provide physical opportunities for all ranks of men and women, not only for the favoured few. He organized and administered professional and lay societies to that end. Knowing the value of athletic competition, he was a strong advocate of the revived Olympic Games; and he encouraged intervarsity, inter-city and inter-playground contests, and track and water carnivals, and became himself a familiar figure running on to the football fields with his black medical bag, at moments of injury. But he wanted the stands to be emptied of men and women who themselves should be learning to play.

In 1915, commissioned in the Royal Army Medical Corps, Tait McKenzie saw the tragedy of widespread physical under-development. He instituted a plan for the physical training of the many thousands of recruits to Kitchener's armies who had never reached their bodily or mental capacity; and another plan for the rehabilitation of the wounded. He became Inspector of Physical Therapy and Remedial Surgery in the military hospitals of Great Britain and Canada and, on the entry of the United States into the war, he became similarly adviser to the American forces, which were already using his lectures and writings as official handbooks.

In the ensuing peace, he strove with other leaders, among physical educators and medical men, to profit from the revelations of weakness exposed by the war, in the hopeful spirit that it would not happen again. He became a founder of the American Academy of Physical Medicine; President of the American Association for Health, Physical Education and Recreation; and founder President of the American Academy of Physical Education. He helped put into practice in France a system of physical rehabilitation in the hope of regenerating that brave country after its enormous manpower losses. He came to know the value of physical education in restraining juvenile and other delinquents.

Tait McKenzie continued to help youth find itself—the epitome of service to the community. By his own active life, he gave proof that the athlete can be a scientist, the scientist an artist, and the artist an athlete. He brought technical and cultural honour to the profession of physical education; health and vigour to the artists; and to the medical profession an example of devotion to the cause of physical medicine. His teachings were sought, not only in Canada, Great Britain and the United States, but also in Japan, China, India, Italy, France, the Philippines, and elsewhere.

Through all his years of distinguished service in the United Kingdom and the United States, Tait McKenzie remained a Canadian in heart and mind and loyalty. Towards the close of his life, when he was world-famous and comparatively well-off, able to live virtually anywhere, he returned to Canada, to the scenes of his boyhood. Here, placing himself in the stream of Canadian tradition, where he belonged, he restored the old grist-mill in honour of his ancestors. To the Mill of Kintail he brought the originals of many of his most inspiring athletic and war memorial sculptures, his



Bill Lingard, Ottawa

Fig. 2.—"The Call". Full-size original in the Mill of Kintail of the renowned statue in Princes Gardens, Edinburgh; main figure of the Scottish-American Memorial by R. Tait McKenzie, 1927.

portrait plaques, and his medallions. Turning out more works than most full-time sculptors, Tait McKenzie reached the pinnacle of creative art as a result of experiences in the 1914-18 war. He was commissioned to execute war memorials and other monumental works in London, Washington, Ottawa and Edinburgh, and in many other notable civic and academic communities. He continued in the sculpture of glorious athletic youth until the last.

In the Mill of Kintail are to be seen more than 70 of Tait McKenzie's works of sculpture, including the Sprinter, the Boxer, the Athlete, the Punters, and the Brothers of the Wind, among his many athletic works; among his memorials are the Red Cross Nurses' Memorial in Washington; General Wolfe at Greenwich Royal Park; Girard College War Memorial, Philadelphia; and, outstanding among them all, the full-sized original of the renowned Scottish-American War Memorial in Princes Gardens, Edinburgh, one of the most noble and inspiring monuments ever erected to the glory of the citizen soldier.

It can scarcely be doubted therefore that the Duke of Edinburgh would find more than a little to interest him in Tait McKenzie. The Mill of Kintail could become a useful focal point for all who seek the best for the common man, namely, a sound mind in a sound body. Here, deep in the woods, one can ponder the paradox of the rise and fall of physical fitness in the modern world, and compare the actions of those concerned today with those of their forefathers. Knowing that it can happen again, one may be inspired in such a place to take action to drive into every home the realization that physical fitness is the first line of national defence, and the bulwark of individual freedom in peace and war.

Tait McKenzie was born in the year of Canadian Confederation—the same year as saw the founding of the Canadian Medical Association. He is, furthermore, sculptor of the Confederation Jubilee (1927) Memorial in the Hall of Honour in the Parliament Buildings in Ottawa. It might be well to honour him in his own memorial Mill of Kintail, in Centennial Year 1967, as a patron saint of world-wide physical fitness, a man whom Canadians may indisputably claim as their own. If so, it would be well to make the most of it now, and to use his inspiring influence meanwhile to guide our co-ordinated action.

Mill of Kintail,  
R.R. 1, Almonte,  
Ontario.

## LETTERS TO THE EDITOR

### THE ETIOLOGY OF POSTOPERATIVE CORONARY THROMBOSIS

To the Editor:

I should like to thank Dr. McIntyre for his informative case report concerning the etiology of postoperative coronary thrombosis (*Canad. M. A. J.*, 82: 982, 1960). He has brought forward a problem that will present itself more and more frequently as the number of older patients increases. I was particularly interested in the two factors he considered significant, namely, emotion and nausea.

Dr. McIntyre has drawn attention to the great importance of an undisturbed post-anæsthetic period in the patient with coronary artery disease. I feel that this period must be planned from the very beginning. In the preoperative visit the anæsthetist checks carefully the anæsthetic history, with particular reference to previously administered agents and susceptibility to nausea. He allows the patient to talk about himself and how he feels about the operation. As they discuss these points, the anæsthetist can weigh the degree of anxiety, fear, or apprehension that exists. Within a few minutes he is aware that the majority of these patients are much concerned with their hearts, and whether they can withstand the operation. At this point the anæsthetist can do one of two things. If he has had training, he can induce hypnosis—a light state may be sufficient in most cases. He explains in detail each step of the anæsthetic and surgical management, removes the emotional stresses and gives post-hypnotic suggestion for absence of nausea and reduction of postoperative discomfort.

If he is not conversant with hypnotic techniques, he can ask the patient to relax all his muscles and close his eyes. He then tells the patient how he will be looked after from the moment he leaves his bed until he wakes up. Often the time taken for sympathetic attention is fully appreciated, and the patient will volunteer that he feels much better. He becomes less worried, and is more confident about the outcome.

A light but adequate premedication to insure emotional calm is given. While the "social" dose of sodium thiopental is administered slowly, the previous post-hypnotic (or non-hypnotic) suggestions are reinforced by repetition.<sup>1</sup>

Although the anæsthetic technique depends on the individual anæsthetist, it has been found that general analgesia is simple and safe, and the patient will be completely alert before leaving the operating room.<sup>2</sup>

In the post-anæsthetic recovery room, close observation is maintained in order to correct any of the several complications mentioned by Dr. McIntyre.

In conclusion, may I repeat that it is vitally important to evaluate the patient and to instigate the anæsthetic management at the first preoperative visit. This may take a little more time but is well worth while. Meticulous care must be taken with the induction and maintenance of anæsthesia. Emergence and the immediate postoperative period will require the same intimate attention.

St. Boniface Hospital, R. S. LAMBIE, D.A., F.A.C.A.  
St. Boniface, Manitoba, Department of Anæsthesia.  
May 19, 1960.

#### REFERENCES

1. MARMER, M. J.: *Hypnosis in anesthesiology*, Charles C Thomas, Publisher, Springfield, Ill., 1959.
2. LAMBIE, R. S.: *Canad. Anæsth. Soc. J.*, 6: 347, 1959.

### HEALTH SERVICES IN THE U.S.S.R.

To the Editor:

The review on "Health Services in the U.S.S.R." which you recently published (*Canad. M. A. J.*, 82: advtg. page 31, May 7, 1960) is inaccurate in my opinion. The tour which is described was directed by the Soviet government, and the visitors could see and hear only what government officials would allow them to see and hear. They could not visit any other part of the U.S.S.R. or speak privately with any member of the medical profession. May I also hint that the most important thing in Soviet medicine is "Marxism". Without it, no diploma is granted.

Earl Grey, Sask.,  
March 17, 1960.

V. SULMA, M.D.

## OBITUARIES

DR. J. A. BAUER, aged 88, a well-known general practitioner and specialist in internal medicine, died April 26 at Hamilton General Hospital. A graduate of the University of Toronto in 1898, Dr. Bauer was on the staff of the Hamilton General Hospital until 1938 and was awarded the Coronation Medal by King George and Queen Elizabeth for his work there.

He is survived by one sister.

DR. HUGH COCHRANE, 83, died April 17 at his home in Arnprior, Ont. Dr. Cochrane graduated from Queen's University in 1906. He practised in Maryfield and Qu'Appelle, Sask., and served as Medical Health Officer for 15 years in Saskatchewan. Since 1928 he had practised in Arnprior.

Surviving are his widow and three sons.



DR. JOHN STAPLETON LEDWELL, aged 49, died suddenly in Montreal, March 26. He graduated from Queen's University in 1935 and had practised in Haileybury, Ont., for several years.

Dr. Ledwell is survived by his widow.

DR. DAVID McCaffrey, aged 80, died April 15 at the Island Home Hospital, Cobble Hill, B.C. Born at Madoc, Ont., he had lived in Nanoose Bay since 1949.

DR. ALFRED E. MORGAN, aged 86, died at his home April 26. A graduate of the University of Toronto in 1900, he practised in that city until his retirement.

Surviving him are two sons, Dr. George A. Morgan, Toronto, and Dr. John R. Morgan of Peterborough, Ont.

DR. WESLEY GARDINER MORRIS, aged 75, died March 24 in Burnaby General Hospital. Born in Summerside, P.E.I., he graduated in medicine from McGill University in 1913 and practised first at Chauvin, Alta., and later in Burnaby, B.C., where he was one of its best known family doctors when it was largely bush country. For several years he served as school doctor.

Surviving Dr. Morris are six daughters.

LE DR JACQUES SMITH est décédé subitement à Avignon, France, le 10 avril, 1960. Le chef du service d'orthopédie de l'Hôtel-Dieu de St-Jérôme était en voyage de repos en France et en Espagne lorsqu'il fut terrassé par une hémorragie cérébrale. Il était né à Montréal en 1924, avait fait ses études classiques au Collège Loyola et Brébeuf et avait été reçu en médecine à l'Université de Montréal en 1950. Après quelques années d'études post-universitaires il avait été reçu fellow du Collège Royal des Médecins et Chirurgiens du Canada en 1954. Le Dr Smith a été inhumé à Avignon.

## PROVINCIAL NEWS

### QUEBEC

The Department of National Health and Welfare recently announced that a public health grant amounting to \$28,600 has been made available to the School of Hygiene, University of Montreal. The grant will be used to assist in the development of an institute for research into industrial health and air pollution problems at the School of Hygiene. The sum will permit the development of an organization which can utilize the services of both personnel of the University staff and specialized consultants in these fields. It is planned to carry out the first phase of the work over a period of three years.

### NEW BRUNSWICK

The eighth annual spring clinical session of the Saint John Medical Society was held on April 27, 28 and

29. Facilities were provided in the nurses' auditorium of the Saint John General Hospital for the first evening session. Dr. H. A. Bird was chairman and Dr. D. E. Cannell of the University of Toronto spoke on acute renal failure in obstetrics and gynaecology. Dr. H. O. Tonning introduced the discussion. For the session on Thursday morning at Lancaster D.V.A. Hospital, Dr. Arnold Branch was chairman. Dr. D. F. V. Brunsdon conducted a clinical pathological conference and Dr. Harry W. Bain led the discussion. Dr. Bain followed with a paper, "Failure to thrive", which was discussed by Dr. R. H. Fitch. In the afternoon Dr. W. D. Miller was chairman while the following topics were presented: "Management of cardiac disease in pregnancy"—Dr. Cannell (discussion by Dr. J. Tanzman); "Iatrogenic disease"—Dr. Bain, with discussion by Dr. L. E. Stickles; and "Management of otitis media"—Dr. R. W. Fanjoy, with discussion by Dr. R. G. Macdonald.

On Friday at the General Hospital, Dr. Joseph Tanzman was chairman for the following program: "Orthopaedic problems of paediatric and obstetric interest"—Dr. K. Seaman, with discussion by Dr. N. C. Grant; a panel discussion on maternal and child health, introduced by Dr. T. A. Foster, assisted by Drs. D. E. Cannell, H. W. Bain, L. LeBlanc, M. Southern-Holt and S. Weyman; "Septic shock in pregnancy"—Dr. Cannell, with discussion by Dr. V. D. McLaughlin; "Neonatal jaundice"—Dr. Bain, with discussion by Dr. S. Weyman.

The visiting physicians from Toronto were a very welcome team of experts and made many new friends. It is hoped that they enjoyed their Maritime trip as much as we appreciated their interesting message. It was a matter of satisfaction to many that they warned of some dangers in thoughtless or unsupervised use of tranquilizers and the sometimes rash use of vitamins in the care of children.

Open house for all members of the New Brunswick Medical Society was provided at the annual meeting of the N.B. Chapter of the College of General Practice, held in Fredericton. The following clinical program was presented: Clinical-pathological conference on the laboratory investigation of anaemia—Dr. D. F. V. Brunsdon and staff; "Preoperative assessment"—Dr. H. H. Mackinnon; Case presentation by Dr. A. F. Van Wart; "Increasing importance of cardiac auscultation"—Dr. George Manning, Professor of Medicine, University of Western Ontario; "Carcinoma"—Dr. Jacques Turcot, Professor of Surgery, Laval University; Case presentation—Dr. R. A. MacIntosh, with discussion by Dr. Turcot.

Dr. Victor Johnston, executive director of the College of General Practice, was the after-dinner speaker. Dr. Murray Fraser, president of the College, and Dr. Lea Steeves of Dalhousie University, were also welcomed. The officers for the past year were continued in office for the year 1960-61.

Dr. J. Gilbert Turner, executive director of the Royal Victoria Hospital, Montreal, gave the graduation address to the 1960 class of nurses at the Saint John General Hospital on May 19. This class was the largest in the history of the hospital, and Dr. Turner's talk on "Loyalty" was outstanding, which perhaps is not surprising, as the speaker is a Maritimer revisiting his native province.

A. S. KIRKLAND

## BOOK REVIEWS

**BRITISH SURGICAL PRACTICE: SURGICAL PROGRESS 1959.** General Editors: Sir Ernest Rock Carling, Consulting Surgeon, Westminster Hospital, and Sir James Paterson Ross, Director of Surgical Clinical Unit, St. Bartholomew's Hospital, London. 391 pp. Illust. Butterworth & Co. (Canada) Ltd., Toronto, 1959. \$10.50.

This book is the annual supplement designed to keep British Surgical Practice up to date. In addition to an index for this particular volume, there is a "Noter-up", which enables the reader rapidly to find new references added since the original volumes were published. At first glance one would think that this specialized volume would interest only those who possessed the complete set of British Surgical Practice. But this is not the case, for the supplement volume contains excellent reviews which make it well worth borrowing from your nearest medical library even if you do not own the original set.

Under the heading of Asepsis and Antisepsis is an article on sterilization by heat by L. P. Garrod. While many of the problems he discusses are peculiar to the United Kingdom, he rightly emphasizes the constant vigilance needed to make sure that standard sterilizing equipment is working properly. A brilliant chapter by Guy Pulvertaft on the care of flexor tendon injuries of the hand provides in only 10 pages one of the best summaries of this subject this reviewer has read. Thought-provoking chapters on the natural history of tumours are provided by H. A. Sissons and R. B. Duthie, writing on a survey of the biological properties of tumours of bone, and by John and Geoffrey Hadfield, writing on the natural history of breast cancer. Each chapter emphasizes how badly we need to understand the natural course of the tumour before embarking on the radical forms of surgery commonly used in treatment.

Other chapters, equally valuable, cover neurosurgery, ophthalmology, otolaryngology, and many other fields of surgery. As in previous volumes, the printing and illustrations are excellent and the literary style beyond comparison with the usual efforts put forth on this side of the Atlantic.

**PHOTOGRAPHY IN MEDICINE.** A. Smialowski and D. J. Currie, St. Michael's Hospital, Toronto. 330 pp. Illust. Charles C Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1960. \$16.00.

The applications of photography in medicine are so great that very few hospitals can, from a scientific point of view, afford to be without some sort of photographic department.

This book merits study by those who are contemplating having a photographic department in their hospital and by those doctors who in their offices would like to be able to obtain photographic records of their patients' lesions.

It is a delight to read and it is an even greater delight to examine the photographs in it. The book is comprehensive, without being involved in a great deal of minutiae. References are supplied for those who wish to pursue extremely detailed technical considerations.

To those who are fortunate enough to have established photographic departments, this book is packed with numerous helpful aids and suggestions, all of which have been carefully thought out. The comprehensiveness of the volume is indicated by the fact

that it starts by describing a typical department of medical photography, including its location and size, and proceeds then to cover the whole field of medical photography including photomicrography. It then ends logically with a consideration of filing and indexing the photographs and the material obtained.

The glory of this book, however, lies in the example which it sets for all medical photographers. The photographs used to illustrate the points made are of the highest quality and are reproduced well on good coated paper. The technical excellence apparent in these photographs should be an inspiration to every medical photographer.

**MASSAGE, MANIPULATION AND TRACTION.** Vol. 5 of Physical Medicine Library. Edited by Sidney Licht. 275 pp. Illust. Elizabeth Licht, New Haven, Conn., 1960. \$10.00.

If this book did no more than give the history of the forms of treatment which constitute the title it would be a valuable addition to medical literature. But it does much more than that. Authors from both sides of the Atlantic survey the current literature, outline their own methods, and indicate the present status of these three methods of treatment. An extensive bibliography is included.

Though massage, manipulation and traction date back to the earliest times, the use of the latter two has been almost confined to irregular practitioners, and even now the majority of orthodox physicians look upon these methods as applied to the back with a questioning eye. This relative unfamiliarity probably accounts for the wide variations in technique; for instance, traction on the neck will vary from 10 lb. to suspension of the full weight or manual traction, for a short time, of 300 lb. Much ingenuity is displayed in the various mechanical methods of traction, particularly intermittent traction with motors. The results, too, vary markedly and probably indicate that many practitioners are still feeling their way in the use of traction and manipulation.

A new method, connective tissue massage, developed just before the War by Mrs. Elizabeth Dicke in Germany, is described. Much experimental work has been done on it during the last decade.

All in all, this volume is highly recommended to those who are interested in somatic pain, which mimics visceral pain often enough to be important in every branch of medicine.

**MAY AND WORTH'S MANUAL OF DISEASES OF THE EYE.** T. K. Lyle and A. G. Cross. 748 pp. Illust. 12th ed. Baillière, Tindall & Cox, London, England; The Macmillan Company of Canada Limited, Toronto, 1959. \$7.65.

This is the English edition of one of the best-selling medical books of the last half century. It is a concise, practical and systematic ophthalmic text suitable for medical students and general practitioners.

The relationship of neurology to ophthalmology is emphasized. The text has been brought up to date and includes the most recent developments in therapy. There is an excellent chapter on tropical eye diseases and a very interesting and practical chapter on ocular neurosis. As always, the colour illustrations are excellent.

We recommend this book to all students and practitioners.



**DISEASES OF THE NERVOUS SYSTEM IN INFANCY, CHILDHOOD AND ADOLESCENCE.** Frank R. Ford. 1548 pp. Illust. 4th ed. Charles C Thomas, Springfield, Illinois; The Ryerson Press, Toronto, 1960. \$32.50.

A new edition of this outstanding work is an event of importance to all those interested in paediatric neurology.

The book has been enlarged by more than 350 pages over the 1952 (third) edition, to attain its present formidable size. New material and up-to-date restatements are found scattered throughout the volume, and important older and recent references are listed at the end of each subject. Illustrations have not been significantly increased in number.

The general arrangement is that of previous editions, but the type and headings have been improved. The index has been greatly enlarged, in conformity with a book of this size.

**ARTHRITIS. General Principles, Physical Medicine, Rehabilitation.** Edward W. Lowman, Associate Professor of Physical Medicine and Rehabilitation, New York University College of Medicine. 292 pp. Illust. Little, Brown and Company, Boston; J. B. Lippincott Company, Montreal, 1959. \$9.50.

This book is unique in that it deals with the problems of the arthritic patient rather than the overall problems of arthritis; it demonstrates how the many resources may be mobilized in a positive and dynamic attack on this most disabling of all chronic diseases in modern society.

The size of the problem is staggering. In his foreword, Dr. Howard A. Rusk points out that although the problems of chronic diseases are not limited to the aged, with the extension of life span a further increase in chronic diseases is unavoidable. The author states that one out of every 10 persons over the age of 14 is affected with some form of arthritis or rheumatism, and more than half of the instances of crippling involve persons under 45 years of age; it leads all others in crippling and in economic loss. The problem is very complex as chronic disease produces changes that affect nearly every phase of the patient's life.

With modern dynamic rehabilitation, as discussed in this book, much of the undesirable sequelæ of such diseases can be minimized, alleviated or even eliminated. To accomplish this, the physician, though responsible for the total care of his patient, enlists the assistance of medicine, orthopaedic surgery, social service, psychology, physical and occupational therapy, vocational counselling and placement, prosthetics, visiting nurses and voluntary health agencies. The approaches suggested by the author and his 24 informed and experienced collaborators are based on research from the laboratories of clinical experience. They aim at restoration of as much as possible of any lost function, teaching the patient to make maximum use of the physical capacities left, to prevent deformities, and attempt to increase or at least maintain articular mobility and the reintegration of the patient into society. They present detailed procedures in the office, hospital and home management of arthritis. As do other leading authorities, the author emphasizes that to be of maximum benefit, rehabilitation must be begun as soon as possible after diagnosis is made. However, initiation of medical therapy, for the control of the arthritic and rheumatic process, must precede the initiation of a physical rehabilitation program.

The first part of the book deals with general features of arthritis.

The second and principal section of the book discusses specific considerations of physical medicine and rehabilitation treatment. There is valuable information on important topics such as principles of therapeutic exercises; home programs of physical therapy; gait training and prescription of crutches, wheelchairs, shoes and shoe corrections; ADL (activities of daily living) testing and training; self-help devices; a very realistic and practical discussion on homemaking training; general principles of physical medicine treatment; low back pain; rehabilitation of the arthritic cripple; orthopaedic surgery in rheumatoid arthritis; role of visiting nurse for the homebound arthritic; social problems of the arthritic; psychological aspects of rheumatoid arthritis; occupational programs for the homebound arthritic; vocational counselling and job placement. It concludes with a useful chapter on voluntary health agencies.

The organization of the material and format are excellent and the book cannot be too highly recommended.

**STUDIES ON VERTEBRATE NEUROGENESIS.** S. Ramon y Cajal, Faculty of Medicine, University of Madrid. 432 pp. Illust. Charles C Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1960. \$14.75.

Dr. Lloyd Guth of the National Institute of Neurological Diseases, Bethesda, Md., has succeeded in translating into current scientific English this book by the leading scientist in the field of neuro-histology. Published in French in 1929, it has become a classic in the field of vertebrate neurogenesis. Studies in neuronal histogenesis in the spinal cord, cerebellum, cerebral cortex, retina, and in the peripheral nervous system are the main topics of this book. A great number of clear illustrations help the reader to understand the difficult and partly controversial issues. Dr. Guth has added an author index and a subject index not included in the French edition. This book will be valuable for English-speaking clinical scientists interested in the field of neuroembryology.

**ATLAS OF ANATOMY AND SURGICAL APPROACHES IN ORTHOPAEDIC SURGERY—UPPER EXTREMITY.** R. Cosentino, Assistant Professor of Orthopaedic Surgery, University of La Plata, Argentina. 192 pp. Illust. Charles C Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1960. \$11.50.

The assistant professor of orthopaedics at the University of La Plata has designed an atlas of anatomy for surgeons, of which this is the first of three volumes. The excellent black-and-white photographs are accompanied by very little comment. Because the layer-by-layer exposures are much more extensive than those on a living patient and no attempt is made to describe what the operator should do when the exposure has been made, it is an anatomy technique, not an operative one.

This atlas is excellent and original in its field. Students of orthopaedic surgery and surgeons who find themselves a little rusty in performing an unusual operation will find it valuable: it will be a fine addition to a surgical library and will help in the studies of the Fellowship candidate.

**DIE PHLEBOGRAPHIE DER UNTEREN EXTREMITÄT** (Phlebography of the Lower Limb). Robert May and Raimund Nissl. 197 pp. Illust. Georg Thieme Verlag, Stuttgart, W. Germany; Intercontinental Medical Book Corporation, New York, 1959. \$16.05.

The authors consider the incidence of phlebothrombosis in the lower extremities to be far greater than commonly realized. Of all the patients attending the clinics of the Sick Insurance System in Vienna, 0.78% suffered from the varicose veins syndrome. The incidence of tuberculosis in the same group of patients was 0.91%. In the population of Sweden of seven million, 108,000 had at one time or another deep phlebothrombosis. Of these 102,000 were suffering from the sequelae of thrombosis and 32,000 had varicose ulcers.

The authors have simplified the procedure of phlebography, which in the past has been reserved to larger institutions, as they consider it to be as important in the study of varices and of the acute and chronic forms of thrombophlebitis as a routine x-ray examination is in the diagnosis and treatment of fractures. Their monograph is an analysis of 3000 examinations of their own, based also on studies in other institutions in Freiburg, Paris and London.

A chapter on the normal anatomy of the venous system of the lower extremities is followed by a detailed description of the various techniques used in the visualization of the veins of the lower extremities. The authors use a 35% solution of the intravenous dye with a No. 14 needle. Twenty c.c. of the solution suffices if one is interested in the visualization of either the lower extremity or the femoral veins. The dye is injected in one minute and the first view is taken 15 seconds later. Anteroposterior and lateral views of the region of the knee and the thigh are taken. The technique of intraosseous (intramedullary) venography is also discussed.

A separate chapter devoted to retrograde phlebography was written by Dr. Jean D. Martinet of Paris. In this method the dye is injected against the stream and flows upwards because of the heavy specific gravity of the contrast medium. Martinet calls his method *la phlébographie retrograde dynamique*. It permits one to assess the competence of the venous valves. The illustrations in this chapter, as well as those in the other parts of the book, are beautiful.

Other chapters deal with the picture of the fresh venous thrombosis, the post-thrombotic status, including changes which occur in the deep veins of the lower leg, the study of the superficial venous system of the lower extremity, the damage to the deep veins following the chemical obliteration of the varicose veins, the congenital anomalies of the venous system and phlebography of the pelvis veins. The manifestations of phlebosclerosis, malignant and benign tumours and venous aneurysms are discussed and well illustrated. Excellent and up-to-date bibliographic data accompany each chapter. A separate list of 25 contributions of the authors on the subject of phlebography is attached.

The monograph is clearly written and profusely illustrated. As a reference book and an atlas on phlebography it will be most useful to the practising physician, surgeon and radiologist. It may also enhance wider use of this valuable method in the diagnosis of venous disorders of the lower extremity.

**HANDBOOK OF DIET THERAPY.** Dorothea Turner. 222 pp. 3rd ed. The University of Chicago Press; University of Toronto Press, Toronto, 1959. \$5.00.

This book gives outlines of normal diet starting with the basic diet and modifications for pregnancy, lactation, childhood, adolescence and old age. In this edition, diets have been included which modify fatty acid intake, and again others are included for phenylalanine restriction. Diabetic diets with exchange lists are to be found, as well as low sodium, low purine diets.

Perhaps the most valuable part of this work is to be found in the appendix where food charts for dietary analysis are included. In this section will be found the cholesterol, fat and fatty acid content of most foods, amino acid content, mineral content and so forth.

It should be pointed out that this book is not large and it does not give detailed day-to-day menus; rather it should be recommended as a source of information on particular articles of diet about which the patient may ask. Also it may be used by the physician to outline special diets which may later be filled out in detail by a dietitian.

**THE ANATOMY OF JUDGMENT.** An investigation into the processes of perception and reasoning. M. L. Johnson Abercrombie. 156 pp. Illust. Hutchinson of London, England; The Hutchinson Group Limited, Toronto, 1960. \$5.50.

Obtaining a truly objective judgment on natural phenomena and situations can be extremely difficult, and the factors which affect our evaluation of these matters are still only dimly perceived. The present book is a discussion of some of these factors affecting perception and reasoning. Mrs. Abercrombie first considers the difficulties of interpretation of pictures, illustrating her arguments with some well-known examples of visual illusions, and then proceeds to a discussion on the effects of human relations in getting information. This leads to the main part of the book, which is concerned with experiments conducted by the author over a period of years with groups of medical students. The subjects discussed in the groups included descriptions of radiographs (observer error), the use of words for information (what is meant by "normal", for example), and the classification and evaluation of evidence. The resistances of the group members to change from dependence on authority to adult responsibility are touched upon, with quotations from actual sessions.

Finally, the author summarizes briefly the argument of the book, which is that we tend to regard as information given what in fact is a highly selective material dependent on a judgment of which we are unaware, and that the information would be more valid if we could consider alternative selections from the original material, i.e. if we could be made aware of the factors affecting our choice. Such alternative judgments can be obtained from free group discussion, and it is suggested that the latter is helpful in improving judgment by individual participants.

**DICTIONARY OF MEDICAL DISCOVERIES: WHO AND WHEN.** J. E. Schmidt. 555 pp. Charles C Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1959. \$16.25.

This dictionary lists thousands of medical and related discoveries in alphabetical order. It will be useful as a quick reference book for medical historians and medical libraries generally.



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#### INSTRUCTIONS TO CONTRIBUTORS

**Manuscripts:** Manuscripts of original articles, case reports, short communications, and special articles should be submitted to the Editor at the C.M.A.J. editorial office, 150 St. George St., Toronto, with a covering letter requesting consideration for publication in the *Journal*. Acceptance is subject to the understanding that they are submitted solely to this *Journal*, and will not be reprinted without the consent of both the Editor and the author. Articles should be typed on one side only of unruled paper, double-spaced and with wide margins. Carbon copies cannot be accepted. The author should always retain a carbon copy of material submitted. Every article should contain a summary of the contents.

The Editor reserves the right to make the usual editorial changes in manuscripts; these include such changes as are necessary to ensure correctness of grammar and spelling, clarification of obscurities or conformity to *Journal* style. In no case will major changes be made without prior consultation with the author. Authors will receive galley proofs of articles before publication, and are asked to confine alterations of such proofs to a minimum.

**Reprints** may be ordered on a form supplied with galley proofs.

**References:** Authors should limit references to published work to the minimum necessary for guidance to readers wishing to study the subject further. They should not quote articles they have never seen. Except in review articles, the maximum number of references should not be more than 25. References should be numbered in the text and should be set out in a numbered list at the end of the article, thus:

1. DOAKES, J.: *M. J. Kamchatka*, 1: 2, 1955, giving in order: (1) Author's name and initials in capitals. Where more than three authors are concerned in an article, only the first should be named, with *et al.* as reference to the others. (2) Quarterly Cumulative Index Medicus abbreviation of journal name. (3) Volume number. (4) Page number. (5) Year.

References to books should be set out as follows:

PICKWICK, S., *Textbook of Medicine*, Jones and Jones, London, 1st ed., p. 30, 1955.

**Illustrations:** Photographs should be glossy prints, unmounted and untrimmed, preferably not larger than 10 by 8 inches. Colour work can be published only at the author's expense. Magnification of photomicrographs must always be given. Photographs must not be written on or typed on. Identification can be made by pasting an identifying legend on the back. Patients must not be recognizable in illustrations, unless the written consent of the subject to publication has been obtained. Graphs and diagrams should be drawn in india ink on suitable white paper. Legends to all illustrations should be typed separately from the text of the article. Illustrations should not be rolled or folded.

#### Books Received

Books are acknowledged as received, but in some cases reviews will also be made in later issues.

**Permeability in Acute Experimental Inflammatory Oedema** in the light of action of Salicylates. E. Kelemen, Szeged University Medical School, Szeged, Hungary. 256 pp. Illust. Publishing House of the Hungarian Academy of Science, Budapest, 1960.

**Brucella Infection and Undulant Fever in Man.** Sir Weldon Dalrymple-Champneys. 196 pp. Illust. Oxford University Press, London, New York and Toronto, 1960. \$3.75.

**Gesellschaft, Kultur und Psychische Störung.** Edited by Dr. Jakob Wyrsch. 120 pp. Georg Thieme Verlag, Stuttgart, W. Germany; Intercontinental Medical Book Corporation, New York, 1960. \$3.05.

**Crash Injuries. The Integrated Medical Aspects of Automobile Injuries and Deaths.** Jacob Kulowski, St. Joseph, Missouri. 1080 pp. Illust. Charles C Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1960. \$32.50.

**Carcinoma of the Thyroid Gland.** A Clinical and Pathologic Study of 293 Patients at the University of California Hospital. Stuart Lindsay, San Francisco, Cal. 168 pp. Illust. Charles C Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1960. \$8.50.

**The Intestinal Tract. Structure, Function and Pathology in Terms of the Basic Sciences.** Richard Paul Spencer. 411 pp. Charles C Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1960. \$12.75.

**Thymectomy for Myasthenia Gravis.** A Record of Experiences at the Massachusetts General Hospital. Henry R. Viets, Boston, Mass. 143 pp. Illust. Charles C Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1960. \$7.00.

**Praktische Endokrinologie.** Prof. Dr. A. Jores, Direktor, and Prof. Dr. H. Nowakowski, Oberarzt, der II Medizinischen Univ.-Klinik und Poliklinik, Hamburg. 312 pp. Illust. Georg Thieme Verlag, Stuttgart, W. Germany; Intercontinental Medical Book Corporation, New York, 1960. \$11.80.

**Differentialdiagnose Innerer Krankheiten.** Eine Kurzgefasste Darstellung für Ärzte und Studierende. Prof. Dr. Robert Hegglin. 913 pp. Illust. Georg Thieme Verlag, Stuttgart, W. Germany; Intercontinental Medical Book Corporation, New York, 1960. \$18.95.

**Recent Research in Freezing and Drying.** A. S. Parkes, London. 320 pp. Illust. Charles C Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1960. \$12.75.

**Medicine in the Making.** Gordon Murray, Hunterian Professor of the Royal College of Surgeons, England. 230 pp. The Ryerson Press, Toronto, 1960. \$5.50.

**The Clown Family Speech Book.** Edited by M. and M. Pollock. 104 pp. Illust. Charles C Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1960. \$6.50.

**Surgical Anatomy of the Bronchovascular Segments.** Edited by W. E. Bloomer, A. A. Liebow and M. R. Hales. 271 pp. Illust. Charles C Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1960. \$16.50.

**Insecticide Resistance and Vector Control.** Tenth Report of the Expert Committee on Insecticides. WHO Technical Report Series No. 191. 98 pp. Also available in French and Spanish. World Health Organization, Geneva, Switzerland, 1960. \$0.60.

**Electrocardiographic Techniques.** A Manual for Physicians, Nurses and Technicians. Kurt Schnitzer. Second revised and enlarged edition. 109 pp. Illust. Grune & Stratton, Inc., New York and London, 1960. \$4.75.

**Le phénomène de Raynaud.** Aspects cliniques, étiopathogéniques, thérapeutiques. P. Langeron et L. Croccel. 198 pp. Illust. L'Expansion Scientifique Française, Paris-VI, 1960. 19.50 NF.

**Premature Babies.** Their Nursing Care and Management. A. K. Geddes, Montreal. 215 pp. Illust. W. B. Saunders Company, Philadelphia and London, 1960. \$4.50.

**Les pancréatites chroniques de l'adulte.** H. Sarles et M. Mercadier. Avec la collaboration de J. C. Sarles, R. Muratore et C. Guen. 266 pp. Illust. L'Expansion Scientifique Française, Paris VI, 1960. 36 NF.

#### CORRECTION

In the list of hospitals approved by the College of General Practice for general practice residencies (the *Journal*, 82: 1093, 1960), the name of Dr. G. R. MacDonald should have been given as Medical Director of the Misericordia Hospital in Edmonton, Alberta.



## MEDICAL NEWS in Brief

(Continued from page 1326)

### CHEWING-GUM IN THE BRONCHI

No longer can one chew gum without anxiety. Any object that is held in the mouth may at some time be inhaled, provided it is of a size to allow passage through the larynx. Stallybrass and Child (*Brit. M. J.*, 1: 1113, 1960) report two cases of fatality from use of chewing gum.

A man aged 62, enjoying reasonable health, was found dead in his garden by his wife who was taking him tea in the afternoon. He had had nothing to eat since lunch, and had not obviously been strenuously employed. Post-mortem examination showed left ventricular hypertrophy, with no evidence of old or recent infarction, or of pulmonary embolus. The trachea and bronchi showed reddening of the mucosa, and occluding the right main bronchus was a single lump of chewing gum; there was no suppuration. Another man, also aged 62, employed by an engineering firm, was apparently in good health. During the morning break he had been chatting with other men, and afterwards when walking towards his machine he was seen to fall suddenly. He was dead when medical aid arrived. The heart weighed 300 g. and showed fine scarring of the myocardium. The coronary arteries showed severe calcifying atheroma but there was no thrombosis. The left main bronchus contained an elongated and flattened mass of chewing gum. The main bronchus was not totally occluded, and the mucosa was inflamed; a small amount of mucus was present. The lungs were congested, but there was no evidence of infection or collapse.

In the first patient there was evidence of diminished cardio-respiratory reserve, and in the absence of definite signs of asphyxia death was attributed to vagal inhibition resulting from sudden impaction of the foreign body in the bronchus. In the second patient, there was evidence of diminished cardiac reserve. The purulent bronchitis was thought to

indicate that the chewing gum had been inhaled some time before death, and that death was due to coronary insufficiency and bronchospasm.

It is pointed out that the longer an object remains in the mouth the greater will be the chance of accidental aspiration, and, further, that people who chew gum are often engaged upon some physical activity; this association with work

is an additional danger, for if involuntary gasping occurs during activity the chance of aspiration is greatly increased. The habit of adding one piece of gum to another in order to maintain the flavour is condemned, because a large plug is formed which is capable of obstructing a main bronchus.

No similar cases have been reported before—a mildly consoling feature for gum-chewing addicts.

## “R Day” for the neuritis patient can be tomorrow

“R Day”—when pain is relieved—can come early for patients with inflammatory (non-traumatic) neuritis if treatment with Protamide is started promptly after onset.

Protamide is the therapy of choice for either early or delayed treatment, but early use assures greatest efficacy.

For example, in a 4-year study<sup>1</sup> and a 26-month study<sup>2</sup> a combined total of 374 neuritis patients treated with Protamide during the first week of symptoms responded as follows:

60% required only 1 or 2 daily injections for complete relief

96% experienced excellent or good results with 5 or less injections

Thus, the neuritis patient's first visit—especially an early one—affords the opportunity to speed his personal “R Day.”

Protamide is available at pharmacies and supply houses in boxes of ten 1.3 cc. ampuls.

Intramuscularly only, one ampul daily.

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1. Lehrer, H. W., et al.: *Northwest Med.* 75:1249, 1955.

2. Smith, Richard T.: *New York Med.* 8:16, 1952

MEDICAL NEWS in brief  
(Continued from page 15)

**ADRENAL CORTEX IN  
SENILITY**

Five groups of subjects (normal young persons, normal old persons, young persons with functional psychosis, persons with senile dementia and old schizophrenics), each comprising five men and five

women, were blindfolded for one-half hour. Samples of blood and saliva were taken immediately before, immediately after and 3½ hours after blindfolding. The sodium-potassium ratio was determined in the saliva and the number of eosinophils was counted in each sample of blood.

Kral and Grad (*Canad. J. Psychiat.*, 5: 8, 1960) report that prior

to blindfolding, young persons with functional psychoses had the highest eosinophil count of all the subjects, the counts of this group being significantly higher than those of normal old persons. Moreover, differences between the former group and normal young subjects or old persons with senile dementia were of borderline significance. In response to blindfolding, normal young subjects showed a significant eosinopenia, as did also the senile dementia patients. However, in the former case, the eosinopenia was apparent immediately after blindfolding, but not three to four hours later. The senile dementia patients on the other hand presented no immediate eosinopenia but showed a very significant change three to four hours later. The remaining groups showed no significant change in the number of circulating eosinophils in response to blindfolding.

In the case of the salivary Na/K ratio the senile dementia and elderly schizophrenic subjects had significantly higher values than the other groups prior to blindfolding. In response to blindfolding, the normal young subjects showed a significant increase in the Na/K immediately after blindfolding with a return to normal three to four hours later. On the other hand, old schizophrenics showed a significant decline immediately after blindfolding with a persistence of low values three to four hours later. All other groups showed no significant change as a result of blindfolding.

These studies provided physiological tests for distinguishing senile dementia from schizophrenia in elderly psychotics. Also, because of the inverse relationship between the change in the level of the circulating eosinophils and salivary Na/K ratio on the one hand and the change of the level of the sugar- and salt-action hormones of the adrenal cortex on the other, it is suggested that the elderly schizophrenic reacts to blindfolding stress by an immediate increase in the output of salt-active corticoids, while the senile dementia patient reacts to the same stress by a delayed increase in the output of sugar-active corticoids.

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